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VIEWS, NEWS AND INTERVIEWS.

The Duchesse d' Uzes, who was known as the financial backer of the late General Boulanger, is at work on a colossal statue of the Virgin Mary, 51 feet high, which she intends to erect on a high cliff in one of her own estates in the department of the Aveyron, France. The statue will be seen for 30 miles around, and the duchess is thinking of lighting up the crown by electricity.

Central station men whose plants are operated by water power will be interested to learn that turbine wheels are being tried instead of screws as the propelling power on small steamers at Dresden. Experiments made with one boat, propelled first with a three-bladed screw and then with a turbine wheel, showed that a speed five per cent greater could be obtained with 10 per cent less horse power by using the wheel.

Glasgow, Scotland, which owns its street cars, prints scripture texts on the cheap tickets for workmen.

That signals of lights may be seen at a greater distance if the flashes follow one another at irregular intervals has been conclusively shown in a series of experiments made by M. Henry at the Dépôt des Phares, says the New York *Sun*. A revolving drum moved by clockwork, and illuminated by a light placed at the axle, was used, the surface of which was pierced by 60 holes. The speed of the drum and the brightness of the light were varied, and some of the holes closed at regular and irregular intervals. The chief difficulty found was in bringing the observer's eye back to its normal condition after each experiment.

I once sent a boy to find a squeak in a lathe counter-shaft, says a writer in *Machinery*; he returned to me saying he could not find it. I asked him whether he used his eyes or his ears to hear with. Not understanding me exactly, I then said to him: "Let us go and see if we can find a pulley that makes the same number of turns per minute as the squeaks we hear." We soon found one. "Do you see that?" pointing to the desired pulley. "Yes, sir," he replied. "Now step up to it and oil its shaft." He did so, and silenced the squeak. "Let me now impress this upon your mind so that you will remember it as a lesson well learned," I said; "in future, when you are sent to find a machine-shop squeak, be sure to use your *eyes* as your *ears*." This little incident, which happened 40 years ago, I have turned to good account many times since. Knocks in engines can be found very easily in the same way, by synchronizing the sight and sound of them.

Several daily papers in England recently printed the following:

Electric Fuses Explode.—An alarming explosion occurred yesterday afternoon on the premises of Mr. A. W. Bennett, electrical engineer, East-parade, Leeds. It appears that a number of fuses, which were being packed, suddenly exploded, causing a report which was heard for a considerable distance, and seriously injuring a youth named Humphreys.

Some robins have built their nest in a rather curious place at Lord Rothschild's mansion, Tring Park, says our London namesake. At the rear of the switchboard in the switch-room on the ground floor, two of these birds have taken up their abode in the network of the electric wires and cables which convey current to the various parts of the premises. The hen bird is at present sitting upon four eggs, some of which may be expected to develop into very wiry little creatures, and we would suggest if there is yet time that the electrician-in-charge should bring electric heating to the assistance of the lady bird.

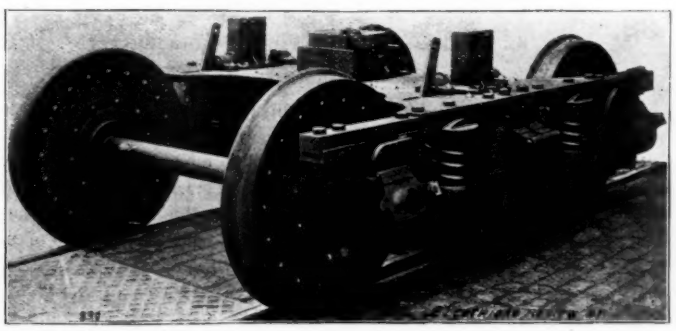
The little village of West Albany is getting to be a lively place. Its prosperity has increased so greatly of late that electric lights have been introduced. One has been placed on the bridge and two in the village.—*Albany, N. Y., Journal.*

General Electric News.

[*From the Boston News Bureau.*]

The General Electric Company is considering closing the Brush Works at Cleveland, which manufactures arc apparatus, but question is not decided. It is probable that Director Twombly, who negotiated upon the proposed Westinghouse arrangement, as well as Director Mills, who has not attended the directors' meetings, will retire from the board at the forthcoming annual meeting.

Mr. S. M. Hamill, general manager of the Brush Electric Company, says that if the Brush works are to be closed he hasn't heard of it.



ELECTRIC MOTOR TRUCK FOR THE NEW YORK, NEW HAVEN & HARTFORD RAILROAD.

OBITUARY.

Missael D. Marchessault, 37 years old, chief telegraph operator of the Boston *Globe*, died at his home in Somerville, Mass., on April 30. He was one of the most expert operators in the country.

Steam Railway Electric Motor Truck.

Readers of the ELECTRICAL REVIEW will remember the announcement which appeared in these columns a short time ago of the fact that the New York, New Haven & Hartford Railroad had decided to equip its Nantasket Beach branch with electric power. The work of preparing the new apparatus is going steadily forward. Through the courtesy of the *Railroad Gazette* we are enabled to present herewith an illustration showing one of the new motor trucks which is now being constructed by the Baldwin Locomotive Works.

The truck is very heavily built, having wrought-iron side frames with loose pedestals bolted in position, and intermediate braces as well. The journal boxes are of cast-iron with heavy brasses neatly fitted to prevent variation in axle centers. The center plates and cross-ties are made of steel and form the receptacle for the swinging bolster, which is also of steel. The bolster springs are double elliptic, and in connection with them there are provided the coil springs common to passenger car trucks to transfer the load to the equalizing beams and then to the journals. All parts have been accurately fitted to gauges and every piece is interchangeable.

Herr Hofmeister's Appreciation of American Courtesy.

In a recent letter to the editor of the ELECTRICAL REVIEW from Herr Harry Hofmeister, Imperial German Telegraph Director, of Emden, Germany, he expresses himself as follows:

I must also take this opportunity to express my heartiest thanks for the excessive kindness shown to me by the authorities and officers of all sections of the telegraph service during my tour in America in 1893, of which I have the liveliest recollection, and hope in the near future to be able in some slight degree to repay the same.

Out of 246 votes cast, 237 Bardstown, Ky., people voted to incur an indebtedness of $7,500 to erect an electric light plant.

THE FINANCIAL VALUE OF STREET RAILWAY FRANCHISES.

BY E. RAY STEVENS IN "THE OUTLOOK."

Perhaps the reader, like most Americans, is apt to become incredulous when he is told that the franchises of the companies which supply water, gas, electric light and rapid transit in our cities are of such value that the companies would, if it were necessary in order to obtain them, pay a considerable portion of the money now raised in our cities by taxation each year to meet the necessary expenses of the municipality. Yet it is true that in almost every British city the burden of taxation has been greatly decreased by the revenues received from the companies to whom these franchises have been granted. In Paris and in many of the Australian cities the companies that have secured these franchises will, at the end of a comparatively short period of time, make the municipality a present of the plants which have been constructed and maintained with their capital, in return for the privileges conferred upon the company by the franchise.

Consider, for example, the revenues that British cities are securing from the companies operating tram lines on their streets. It is true that these British cities had the decided advantage of a wise and comprehensive law, which governed the granting of franchises for rapid transit lines in such a way as to make it well-nigh impossible for British cities to adopt the short-sighted policy that in almost every American municipality has controlled in the granting of these privileges. The conditions in the cities of the two kindred nations are so similar as to make the experience of British municipalities of great value to the people of America.

This law is known as the Tramway Act of 1870. It provides in a very careful way for all of the steps necessary to obtain a franchise and to construct a street railway. The act authorizes municipalities to build their own tram lines when they so desire. But at the same time they must make provision for the establishment of a sinking fund or for annual payments on the debt that will, in a certain definite period, not to exceed 30 years, cancel the entire indebtedness incurred by constructing the lines. Cities cannot, however, without special permission, operate the lines or furnish the rolling stock.

In case the line is built by a company, the municipality has power, at the expiration of a period of 21 years, or at the end of any subsequent period of seven years, to purchase the line at an appraised valuation, "paying the then value," to quote the language of the act, "exclusive of all allowance for past or future profits of the undertaking, or any compensation for compulsory sale, or any other consideration whatsoever." This clause has recently been given a very strict construction by the House of Lords, the highest court of appeal in England. It was there decided that the municipalities should pay only for the actual value of the line at the time of purchase. This value is to be fixed by arbitration in each case.

Had American cities been controlled by such a law, these franchises would not have been dealt out to private companies with such a prodigal hand. The value of such regulation is beginning to be recognized in some parts of this country, as in Wisconsin, where a bill is now pending which contains substantially the same provisions as the Tramway Act of 1870, and at the same time extends its operation to control the granting of all franchises instead of limiting it to street railways alone. The passage of such an act would doubtless bring about much the same result in America as in Great Britain,

FIG. 1.—AN ARTISTIC ORNAMENTAL ARC LAMP BRACKET.

where nearly all of the larger cities have become the owners of their tram lines. Nearly one-fourth of the tram lines in England and Scotland are now owned by municipalities, and the number will increase much more rapidly in the next few years, as the statutory period of 21 years is to expire in most cities during the next decade, and few municipalities have thus far allowed this period to expire without becoming the owners of their lines.

Most of the cities that now own their trams have leased them to private companies. An examination of these leases show that, as a rule, the amount of money received from the company leasing the line is such as will, within the statutory period of 21 years, pay the entire debt, principal and interest incurred by the building or purchasing of the lines, as the case may be.

Glasgow was one of the first cities to construct a system of tramways, and now is one of the few British cities that is operating its own system of rapid transit. By the terms of the lease, which expired last July, the city received such an annual rental as would pay interest on the money invested in the construction of the line, together with an annual contribution to the sinking fund sufficient, at the end of 21 years, to cancel the total indebtedness. Further, the company was to keep the line and adjacent paving in repair, and, in addition to the sums noted above, was to pay the city annually $750 for each mile of the track used.

The company also agreed to certain regulations, such as that the fares should not exceed one penny, or two cents of American money, and that at certain hours of the morning and evening workingmen should be allowed to ride at half price.

The provisions of the tramway leases in each of the larger British cities that own their own lines, while differing in details, practically amount to this: The city in each case lends its credit with which to build the line. The company repays the loan, with interest, and at the end of 21 years turns the line over to the city as a return for the privilege of using the streets for its traffic. Nor is this all. By the terms of many of the leases the city receives an additional sum each year over and above these amounts.

An examination of the provisions in the leases of two or three other British cities will serve to point the truth of this generalization. The Birmingham lease is modeled upon that of Glasgow, and the two are almost identical in terms. In Manchester the annual rentals paid for the use of the city tram lines yield a surplus of about $65,000 after paying all expenses, such as those of maintaining the line, and after placing $32,000 in the sinking fund. The investment has been a good one for the city, as is shown by the fact that the total receipts from rentals since 1879, when the line was constructed, have been $1,275,000, while the total cost of the line has been but $725,000. And it must be remembered that at the expiration of 21 years, when the lines will have paid for themselves, the city will have a most valuable property, whose revenues will each year greatly reduce the amount of the city tax levy.

The leases of the municipal tram lines of Liverpool, Edinburgh and other larger British cities are much the same, and in each case the lease contains a provision that the fares shall not exceed one penny per stage of about one mile each. And it should be added that even under these conditions the companies secure large returns upon the capital invested.

American street-car franchises, especially in the larger cities, are as valuable as those of any European municipality. Indeed, the traffic is usually greater here than in those cities, and the average fares collected are nearly twice as large. There is no reason why as large financial returns for these franchises should not be demanded here as has been secured in the cities across the Atlantic. That companies will, if necessary, pay as well for the privilege of using the streets for their traffic as they do upon European soil is shown by the example of Toronto, Canada. That city purchased its lines and leased them to a company on terms very similar to those secured by British cities. And the financial success attending the operation of the cable railway across the suspension bridge that unites New York and Brooklyn has shown that American municipalities can operate street railways as successfully as their British cousins.

Some few American cities have secured some financial returns by collecting license fees or percentages on gross receipts from street-car companies; these returns, however, are almost always a totally inadequate compensation for the privileges granted. But most of our cities have followed the short-sighted policy of giving away these franchises, without asking either financial returns or concessions that shall secure cheap or efficient rapid transit.

What an Electric Heat Alarm Can Avoid.

On May 7 a very disastrous fire occurred in the village of Moretown, Vt., in which considerable property was destroyed and the surrounding forests were set burning. The cause of the fire was an overheated journal box in Tripp, Tannant & Company's large mill. It soon spread to other buildings with the result stated. Had the bearings in the mill been provided with some reliable sort of electric heat alarm no serious damage could have occurred. It would seem to be a good thing for the factory mutual insurance companies to insist upon an electric alarm being used on all bearings in mills and shops where there is danger of fire. A slight reduction in the premium as an incentive would undoubtedly result in decreased losses to the insurance companies and at the same time make it easy for the policy-holder to adopt the alarms.

Ornamental Arc Lamp Brackets.

Now that interior arc lighting has reached such an advanced stage and is every day becoming more popular, there is a considerable demand for artistic appurtenances which will be both serviceable and beautiful, and will add to the efficient light-giving power of the lamp.

This demand has been met in one important respect by the General

FIG. 2.—ORNAMENTAL ARC LAMP BRACKET.

Incandescent Arc Light Company, for which R. B. Corey, 714 Havemeyer Building, New York, is general sales agent. The company named has designed a number of ornamental arc lamp brackets, which are suitable alike for use with lamps in interior lighting or for out-door service. Fig. 1 illustrates a very handsome bracket made of wrought-iron which extends from the wall three feet and six inches. Fig. 2 shows another wrought-iron bracket with an extension of five feet, while Fig. 3 illustrates a neatly designed bracket extending four feet and six inches from the point of attachment.

Strange Adventure of a Search-Light.

The Scott Electric Lamp Company, of 126 Liberty Street, New York, has just secured possession of a search-light which has had a most unusual experience. The lamp is now on exhibition in the company's offices, and its history is as follows:

In January last, just prior to the sailing of the ill-fated "City of Haverhill," the Scott company installed on her one of their Huntington 5,000 candle-power search and position lights. This apparatus was recently picked up by the pilot boat "James Gordon Bennett." It was found attached to the roof of the pilot-house floating at sea, some 100 miles off Sandy Hook. The apparatus was in fairly good condition, considering the action of the sea water and the battering of the waves. The condensing lenses were not even cracked, but the heavy iron base had broken loose and sunk in the ocean.

Telegraphic Historical Society's Annual Meeting.

The first annual meeting of the Telegraphic Historical Society was held at Washington, D. C., on May 1. The organization was formed in Washington a year ago, largely through the efforts of Mr. George C. Maynard, an old telegraph operator and Washington correspondent of the ELECTRICAL REVIEW. The society now has a membership of 265, scattered all over the United States. Its purpose, as its name implies, is to collect data of the early history of the telegraph, to give credit where credit is due for pioneer work in making the idea of telegraphy a practical system, to clear up any clouds that may exist over the history of the original inventions, and, incidentally, to promote a feeling of fellowship among the men who handled the keys when the science was in its infancy.

The president of the society is Mr. Alonzo B. Cornell, of Ithaca, N. Y. He was unfortunately detained by a business engagement in New York and was unable to be present at the annual meeting. In his absence the meeting was called to order by the vice-president, Mr. William B. Wilson, of Philadelphia. The youngest son of Professor Morse, Mr. Edward Lind Morse, was also present and took an active part in the discussion of some of the points connected with the early history of telegraphy. He had with him a number of interesting relics, letters and notebooks from his father's collection, which cast some new light on several mooted questions.

The following officers were elected for the ensuing year: President, Alonzo B. Cornell, Ithaca, N. Y.; first vice-president, S. H. Kauffmann, Washington, D. C.; second vice-president, William B. Wilson, Philadelphia, Pa.; third vice-president, Thomas D. Lockwood, Boston, Mass.; secretary and treasurer, Geo. C. Maynard, Washington, D. C.; members of executive council, J. H. Emerick, New York city; B. F. Dillon, Jacksonville, Fla.; Wm. R. Plum, Chicago. Ill.; J. Q. Mason, Tacoma, Washington.

Later the meeting became rather informal in its character, and a number of those present were called upon either to read papers or to recount some of their experiences in the early years of the extension of the telegraph. The principal paper was presented by Mr. Henry A. Reed, of New York city, on the subject, "The Paternity of the Telegraph." Mr. Reed's paper was largely of a reminiscent nature, and told a good deal of Professor Morse as he knew him.

Dr. J. J. Clark gave some personal reminiscences of Morse and Vail as he knew them, and after the reading of a historical paper, written by Mr. Thomas D. Lockwood, the meeting adjourned.

Electricity on the Denver & Rio Grande.

Mr. John Brisben Walker, proprietor of the *Cosmopolitan Magazine*, has written an interesting article for the May number on "Great Railway Systems of the United States," in which he describes the birth and growth of the Denver & Rio Grande Railway and its 1,600 miles of mountain lines. Mr. Walker's article concludes with the following paragraph:

In the front rank of the great railway systems of the world, it seems probable that the Denver & Rio Grande, owing to the topography of the country through which it passes, will be one of the first to be converted from the old ways of steam to the new world of electricity. Along its devious routes a hundred mountain streams waste their energies. Down every mountain side dash waters capable of driving dynamos of countless horse-power. What are the obstacles in the way of using this new motive power, the engineers of the road alone understand. But I doubt if there are others than those incidental to the additional capital which a change would involve for new machinery. First to welcome the new electricity will, I predict, be the mountain railway system of the Rio Grande, and the transcontinental traveler will, in the near future, enjoy his magnificent mountain views free from the nuisance of smoke and cinders.

High Praise for an Electric Railway Company.

[*From the Rochester, N. Y., Times.*]

The officers of the Rochester Railway Company believe that the promises of a corporation are to be kept just as sacredly as the pledges of an individual. And this belief is one that the company puts in practice in its business relations with the people of the city, and with its employés. The company has kept to the letter every pledge that it has made to the people of the city, and to its employés. The *Times* on Saturday reported in full the action of the company in restoring the old scale of wages paid to its employés up to a year ago when a cut of 10 per cent was made because of the business depression. When the cut was made the employés were given to understand that the old wages would be restored as soon as business warranted such restoration. The officers of the company now find that the earnings of the company warrant them in restoring the old rate of wages, and so they adopted a resolution that on July 1 the old scale would go into effect. They took this action without any solicitation upon the part of the employés. They were not waited upon by committees bearing petitions praying for an increase of wages. There were no threatenings of a strike or any fuss of any kind.

The people of this city are proud of the Rochester Railway Company. It has given them exceptionally good service. It has striven to employ none but first-class men. Its cars are operated with such great care that the number of accidents has been reduced to the minimum. The company keeps out of politics and consequently its dealings with the city are not tainted with scandals. President Beckley and the subordinate officials of the company are to be congratulated upon the success that has attended the honorable and business-like policy that has been pursued by the company since Mr. Beckley became president.

FIG. 3.—ANOTHER STYLE OF ORNAMENTAL ARC LAMP BRACKET.

The Brockport, N. Y., electric light plant has been equipped with automatic sprinklers in the boiler room and all wires in the dynamo room will be run in porcelain tubing under the floor.

A METHOD FOR PREVENTING ARMATURE REACTION.

READ BEFORE THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS, NEW YORK AND CHICAGO, MARCH 20, 1895, BY HARRIS J. RYAN AND MILTON E. THOMPSON.

DISCUSSION.

(*Continued from Page 238.*)

Dr. Cary T. Hutchinson: It seems to me rather interesting that there have been two attempts made recently to get rid of sparking, one by Mr. Sayer, of England, and the second by Professor Ryan here. Mr. Sayer, instead of doctoring the field, puts an extra winding on the armature connected between the commutator bars of the coil to be short-circuited. This was found to work only in one direction. So recently he made an addition by putting on a commutating lug—a sort of postscript. Professor Ryan starts with a balancing coil and finds it does pretty well. But it does not answer under all circumstances. So he too adds an additional commutating lug. It is rather amusing to see that both should follow the same line. The first ideas are more or less ineffective; then they are improved to meet the conditions. I think that both of them are fundamentally wrong. There are so very many interesting points in a paper like this, that it is impossible to touch upon them all in an evening's discussion. But one thing in particular, I think, should be emphasized strongly. The fact that the output of any armature properly designed does not depend on sparking. Sparking is evidence of bad design and should condemn the machine without regard to any other consideration. Any one taking this view will see at once that no device of this kind can increase the output of the machine in the slightest degree. It decreases the output of the machine for the reason that the extra winding takes up space that would be valuable. It adds weight; it adds copper. I hold the point of view that any machine, properly designed, will not spark; and as a sort of comparison with this machine, I wish to give some figures of a machine which is in use in the city here, of the very simplest design, that does not spark under any conditions, short of the abnormal. It has no Sayer device and no balancing coils. It impresses me that the use of a balancing device is as if a man, wishing to walk along on a level, should walk up a hill 150 feet and then down again. The armature effect takes you down, and the balancing coil brings you up. The machine described on page 174 is the largest mentioned, and it makes a fairer comparison than the others with the one I am about to describe. That machine may be taken normally to be 12 kilowatts. It has a total weight of 865 pounds. Leaving off the last item and adding the other weights, you will find that the "active" weight is, say, 740 pounds. The machine runs at a peripheral speed of a little over 2,800 feet a minute. Making this 3,000 feet for the purpose of comparison would mean an output of 17 watts per pound of active weight, with, of course, the balancing coils. There is pretty nearly as much copper in the balancing coils as there is in the main field coils. The machine I have in mind is of the ordinary Continental type, with two field coils, two salient poles and two consequent. It is a 30-kilowatt. Its total weight is 3,300 pounds, and its "active" weight is 2,600 pounds. It runs at a peripheral speed of only 1,500 feet per minute. Calculation will show that its output for that active weight is about 12 watts, roughly, at 1,500 feet per minute. Doubling that would give an output, at a peripheral speed of 3,000, of, say, 24 watts per pound active weight. It is a plain, ordinary machine, nothing special about it, and will carry 60 to 70 per cent overload without a sign of sparking, without showing whether the current is on or off. Should we, however, make the comparison on a slightly different basis, referring still to page 174, it shows even more strongly in favor of the point I am making. You will notice that the watts lost in the armature proper in this machine are given at 618. The proportions of the two machines are very nearly the same, one, 10×5, the other 18×10. Assume that the radiation in my armature is the same as in the armature described here, and that, therefore, my armature could carry a current determined only by this heating; this would give 200 amperes, which it has carried without sparking. The output of the machine then would be 38 watts per pound active weight at 3,000 feet per minute. It seems to me that it is unnecessary to use the methods described here; that it is going back to archaic ages; for, in my opinion, any machine that needs this doctoring is fundamentally wrong. I believe a machine, instead of being designed with weak field excitation and low induction, should be designed on opposite lines, with strong excitation and heavy induction. One might think this would increase the weight of the copper in the fields and bring up the total cost of the machine. As a matter of fact, I find that the weight of the copper, with the balancing coils, in the machine described on page 174 is 12.8 per cent of what I call the "active" weight. In the machine I speak of, the proportion of field copper is only 10.1 per cent. It is an ingenious exercise, and not much more. Referring in the same way to another point, that the gap induction should be as low as possible, I take the opposite view, that it should be as high as possible.

There are quite a number of other points that one might bring up for discussion, but I will not take more time.

Mr. Chas. S. Bradley: I am quite interested to know that there are machines which do not spark. I have heard of those before. Generally, however, I have found that they existed in the ideal of the manufacturer. Almost every man declares when he has constructed a new machine that there is no sparking whatever, but just as soon as anybody undertakes to use it, and the commutators get the least rough, then they begin to spark, and I never saw one yet that did not spark, although I would go a good many miles to see one.

Dr. Hutchinson: Will you come up and see me to-morrow?

Mr. Bradley: I will be very glad to. I would walk 10 miles to see one that did not spark.

Dr. Hutchinson: Come to the Postal Telegraph Company's building, 253 Broadway.

Mr. Bradley: Do you take care of it all the time?

Dr. Hutchinson: No, I never see it.

Mr. C. O. Mailloux: The paper read by Professor Ryan is one which has undoubted merit in the beauty of its theory and the perfection of its experimental demonstration of the principle involved, whatever may be the commercial practical value of the invention. The point which was made by the preceding speaker is well taken in one sense, in regard to the heating limit, and it would apply particularly to this machine, because the ventilating space around the armature is so much reduced. There is little chance for convection or the motion of air currents by means of which heat can be dissipated. I have found that to be a strong objection and one which has a direct influence on the heating limit of the machines. In fact, insufficient air circulation is more apt to reduce the capacity, in consequence of the heat limit being sooner reached, than is any excess of heating caused in the pole-pieces themselves by the eddy currents due to variations of magnetic density by the action of the teeth of the armature. In other words, the loss in dynamos caused by the eddy currents and the consequent heating in the machine frame, etc., is not as serious as is the reduction of the output capacity of the machine in consequence of its not being able to ventilate itself properly. One may, therefore, have a machine which, so far as the copper is concerned, would be very far removed from its possible capacity limit, whereas its practical capacity limit is sooner reached, due to the fact that it cannot dissipate the watts generated in the armature or pole-pieces.

One of the most interesting points, in my opinion, which Professor Ryan has called to our attention this evening, and one which must interest a large number of those present, is the question of density in the armature teeth and the density in the air gap itself. There are many here who cannot afford to throw away the designs and patterns they have for manufacturing the dies for punching the armature disks, etc., and they cannot quickly or readily depart from existing commercial and well-developed or well-established as well as successful types; yet, within certain lines they are very eager to develop their machines without introducing any radical changes; and it is to them that the question appeals with especial importance. Professor Ryan called attention to the fact, which is now recognized, that we can palliate the difficulties of armature reaction by increasing the magnetic density of the armature teeth. I mentioned before this Institute, some two years ago or more, that in my practice I had sometimes carried the density of lines of force in armature teeth to such a degree that the permeability came down to something like two or three. About two years ago I had occasion to have a special motor made, and my attention was called by the party who was furnishing me the disks to the fact that the total equivalent sectional area of the teeth was rather small in comparison with the sectional area of the armature itself, or the available iron for the passage of lines of force in the teeth was a very small proportion compared with the sectional area through the armature core itself. He was somewhat surprised when I told him this was done on purpose. I explained to him that I believed in having the magnetic reluctance entirely in the air-gap. It did not make any difference whether we had it in air or in iron, provided it was there; though there are certain evident advantages in having it in iron as much as possible. I had observed that by using high saturation of the armature teeth and high field density in the air-gap, it was possible to eliminate or palliate the difficulties resulting from armature reaction to a great extent, and consequently the machine became more sparkless, and had a higher load limit. In making the teeth narrower or deeper to increase the magnetic density, we gain incidentally in the space available for wire, and thus increase the capacity of the machine. This plan has its disadvantages and limitations, I will admit; but it seems to me to be a point of great interest and on which there must be many persons here who have experience.

Another point which I would like to have some of the gentlemen here discuss is the question of the magnetic density in the air-gap per square centimetre. My own experience indicates that practically there is no limit to the air-gap density; it is merely a question of what one is willing to pay for it in the form of watts wasted in producing the magnetizing current. The higher the density in the air-gap, the greater the extent to which one enabled to reduce the armature reaction and increases the output of the machine by making its load limit farther removed. With higher air-gap densities the air or extra dental portion of the gap can be decreased without detriment. When I speak of the air-gap, I often include the total space between the face of the pole-piece and the bottom of the root of the tooth or the inter-dental space. This does not seem as strange as it might at first seem, when you consider that in working at very high densities the permeability is approaching a value which is nearly that of air. In some calculations for special work, I have found myself obliged to take into consideration the joint reluctance of teeth and air space. Usually where such low densities are considered in the iron of the teeth, the number of lines of force—the number of square centimetres in the air of the air-gap between the armature teeth (the inter-dental space)—is of no consequence. But when you reach permeabilities as low as two and three, or even before that, the air itself between the armature teeth becomes a magnetic conductive medium of some importance. For that reason, it is perhaps quite as logical to treat the air-gap as if it were all air, with a portion of it more or less short-circuited, or having its magnetic reluctance enhanced by the presence of metal of higher magnetic conductivity.

The question is, I think, one of greater importance than might at first seem, and it has a great bearing on the question of good performance of machines and their output limit, consequently on their weight. I think it would be of interest to have the experience on that subject of many others here present.

(*To be continued.*)

The Oldest Electrical House.

A correspondent asks us to state the name of oldest electrical house in the United States in business to-day.

We should be pleased to hear from the "oldest electrical inhabitant."

We are not sure, but are inclined to the belief that the Partrick & Carter Company, of Philadelphia, established in 1867—twenty-eight years ago—is entitled to this distinction, with L. G. Tillotson & Company, now the E. S. Greeley & Company, probably second.

Here's a chance for the "Old Timer" to tell what he knows.

The city of Brockton, Mass., has signed a contract for one year with the local telephone company for 28 instruments in connection with the police signal system for $140 for the year. The price last year was $280.

ELECTRIC RAILWAY NOTES.

Work on the new electric railroad at Ilion, N. Y., is progressing rapidly.

The electric railway mail service proved to be an instantaneous success in Boston.

Car-fender patents have of late been issued from the Washington Patent Office at the rate of seven a week.

The prospects of an extension of the Rockland Electric Railroad to Thomaston, Me., appear doubtful.

It is said that the new Beverly, Essex & Gloucester, Mass., electric railway will operate an express service.

The Citizens' Street Railway Company, of Detroit, is making considerable improvements in track construction.

It has been estimated that electric railways have already displaced 1,100,000 car horses. This is probably less than the actual number.

The Syracuse, N. Y., Railway Company contemplates running combination baggage cars to carry bicycles, trunks and miscellaneous baggage.

The Duluth-Superior Traction Company will ask the city authorities of Duluth, Minn., for a franchise allowing them to supply steam for heat and power.

It is proposed to construct a freight and passenger electric road up the Ossipee Valley, from Cornish to Effingham, N. H., to connect with the Boston and Maine Railroad.

The canal trolley is reported to be almost ready for business and some time this year it is expected that the tow-line mule will be banished from the canal between Syracuse and Buffalo, N. Y.

An electric railway mail service has been inaugurated between Pottsville and Minersville, Pa. Three mails are carried daily, and the service will probably be extended to other towns.

Five hundred men are at work on the new electric railroad in Jamaica, L. I. According to contract cars must be running from the Kings County Elevated railroad to Far Rockaway and the beach by July 1.

Daily progress is being made on different parts of the Inter-State Consolidated Street Railway and it will be but a few weeks before the Attleboro, North Attleboro & Wrentham, Mass., branch of the road will be reopened.

The West End Street Railway Company, of Boston, will electrically equip all its remaining Somerville horse lines this Summer—some 7 or 8 miles. A new car house will be built somewhere near the terminus at West Somerville.

George B. Wheeler, of Eau Claire, Wis., having been appointed by Judge Jenkins as receiver of the Eau Claire Street Railway, Light and Power Company, it is now in the possession of the Atlantic Trust Company, of York, they having foreclosed its mortgage of $400,000.

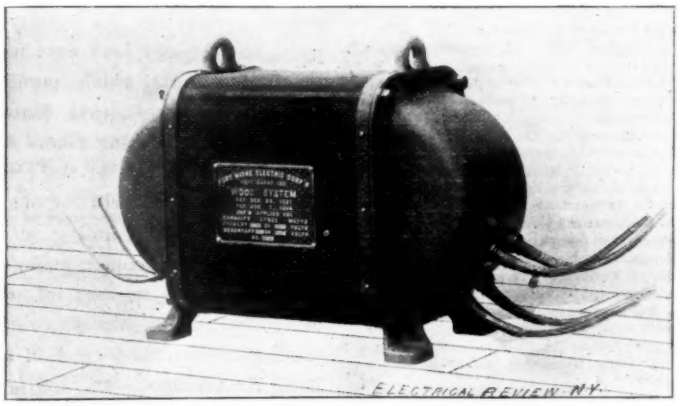
Electric railways cannot be built and operated in Pennsylvania under the general railroad law is the tenor of an important decision rendered at Norristown upon the application of the Pennsylvania Railroad Company for an injunction to restrain the Bridgeport Railroad Company from operating an electric railway on the public road in Upper Merion township, on which abut lands of the Pennsylvania Railroad Company.

The Long Island Loan and Trust Company is going to foreclose a mortgage of $100,000 against the Long Island City and Newtown Railroad Company, and application was made last week to Justice Bartlett, in the Supreme Court in Brooklyn, N. Y., for a receiver. Lucien N. Manley had already been appointed a receiver in another suit against the road, and Justice Bartlett announced that he would also appoint him in the present case, unless there should be some hostility against his holding of both places.

A case involving the right of vehicles to cross street railroad tracks upon which trolley cars are run was tried last week in the Brooklyn, N. Y., City Court. Michael Degnan sued the Brooklyn Heights Railroad Company for damages. He was driving across Classon avenue at Putnan avenue, when a car struck the rear of his wagon, throwing him out and injuring him. The railroad company alleged that he was guilty of negligence and that the trolley car had the right of way. The jury gave Degnan $4,000.

The Terre Haute, Ind., Electric Railway Company's gross earnings for March, inclusive of receipts from its electric light and power plants, were $9,299.31, a gain over March, 1894, of 53 per cent, and its April earnings are still better, being $10,995.31, an increase over April, 1894, of 72 per cent. The railway plant has cost about $900,000; the steam heating and electric lighting plants some $150,000 or $200,000 more. In 1892 the company paid a dividend of 7 per cent, in 1893 10 per cent; since then all the surplus earnings have gone into improvements of the finest character. Last year the company carried over 2,500,000 passengers, and their entire loss from accident was one-fortieth of 1 per cent of the gross receipts, or, all told, $488.

The contracts for the building of the Buffalo & Niagara Falls Electric Railroad have all been let and active work has commenced. The original contractors, the White-Crosby company, of Baltimore, have sublet the work in four sections. The first section, extending from Buffalo to the village of Tonawanda, has been let to George E. Clark, of New York. The second section, through the village of Tonawanda, has been let to Rogers & Ryan; third section, through North Tonawanda, to Nicholas Beckrick; and the fourth section, from North Tonawanda to the Falls, to Fred E. Dean, John S. Pieres and Norman Rar, of Niagara Falls. The contract for the crushed stone for the 18-foot roadbed was let to Edwin Terrill. The ties, which have already been distributed along the line were furnished by Wheeler & Holden, of Buffalo. The Cambria Iron company, of Johnstown, Pa., will supply the rails; the J. G. Brill company, of Philadelphia, will furnish the motor cars; and the General Electric Company, of Schenectady, the motors. The open cars will be furnished by the Jackson-Sharp company, of Wilmington, Del. Cars will leave the monument, on Main street, Buffalo, every 15 minutes. The time-table will give a 75-minute service between Buffalo and the Falls.



FORT WAYNE ELECTRIC CORPORATION'S NEW TYPE OF TRANSFORMER.

The Fort Wayne Electric Corporation's New 750-Light Transformer.

The accompanying illustration represents a new type 37½-kilowatt transformer designed by Mr. James J. Wood for sub-station use. It is constructed so as to be used on either 1,000 or 2,000-volt primaries, of from 60 to 140 periods, and the secondaries are arranged for connection to either a two or three-wire system. This transformer presents a very substantial appearance, while the design and construction is of the simplest, as well as the neatest, possible character. The ventilation is so perfect and the radiating surface so large in proportion to the output that the raise in temperature is very low, even when run for 11 hours on full load. The regulation is within 2¼ per cent, while the efficiency at full load is 98.33, ¾ load 98.39, ½ load 98.33, ¼ load 97.30, ⅛ load 95.09, $\frac{1}{16}$ load 90.82. This is claimed to be the highest efficiency ever obtained with an alternating current transformer. At present two sizes are ready for the market, 375 and 750 lights, respectively. The dimensions over all of the 750-light size are: floor space, 18x39½ inches; height, 28½ inches; weight, 1,860 lbs. The dimensions of the 375-light size are: floor space, 15x32 inches; height, 24¼ inches; weight, 933 lbs.

KIND WORDS.

CONGRATULATIONS FROM A PROMINENT TELEPHONE MANUFACTURER.

TO THE EDITOR OF ELECTRICAL REVIEW:

Allow me to congratulate you on the general enterprise exhibited at all times by the ELECTRICAL REVIEW, and especially the able and impartial manner in which the telephone interests are covered.

Have always looked on the REVIEW as one of the leading journals in this field, and during my connection with it as an advertiser have had no reason to change my opinion in this respect.

Wishing you continued success, I remain, yours very truly,

J. D. LEATHERBEE,
Treasurer National Telephone Manufacturing Company, Boston.

"BETTER RESULTS THAN FROM ANY OTHER PAPER."

TO THE EDITOR OF ELECTRICAL REVIEW:

I hope in about a month or six weeks to do some business with you. I don't exactly know why, but it is a fact that I always had better results from advertising in the ELECTRICAL REVIEW than in any other paper. This in the face of the fact that our card was always smaller in the REVIEW than in other papers.

CHICAGO ADVERTISER.

"COULD HARDLY DO WITHOUT IT."

TO THE EDITOR OF ELECTRICAL REVIEW:

Have been a subscriber to your valuable paper for some time, and think we could hardly do without it. Although we are not electricians, we think it a valuable paper to any one studying electricity to any extent.

MACHINISTS.

Wall Lake, Iowa.

"MOST EXCELLENT."

TO THE EDITOR OF ELECTRICAL REVIEW:

I very highly appreciate the merits of the ELECTRICAL REVIEW and consider it a most excellent scientific journal, treating in an interesting and instructive manner those branches of electrical science which are most essential to the education and enlightenment of your readers. F. E. W.

Delaware County, Penn.

IS QUITE ATTACHED TO IT.

TO THE EDITOR OF ELECTRICAL REVIEW:

The last number of the ELECTRICAL REVIEW has not reached me. I have already become quite attached to it, as I think it the best electrical paper I ever read. E. H. V.

Christiansburg, Ky., May 9.

Electric Mining Installations in California.

Many of the important mines in the Mother Lode of California are putting in electric plants for power. The Santa Ysabel people have already contracted with the Westinghouse company to equip their mine, and the big Utica mine has just re-equipped itself with a new electric plant. Mining men generally look for a large increase of business for the electric companies as the work of development in the California mines progresses.

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SPECIAL NOTICE TO ADVERTISERS.

CHANGES for advertisements must be in this office by Friday noon for the following week's issue. NEW ADVERTISEMENTS should be in the office not later than Saturday noon to insure publication the following week.

NEW YORK, MAY 15, 1895.

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MUNICIPAL OWNERSHIP OF ELECTRIC LIGHTING PLANTS.

The question of municipal ownership of electric lighting plants is one of constantly growing importance, both to the stockholders of existing central station plants and to manufacturers of apparatus, as well as to cities. In last week's issue of the ELECTRICAL REVIEW appeared an article drawing attention to the matter as it is carried out in Manchester, England, one of the best governed municipalities in the world. The writer of the article dwells on the difference of conditions necessary to successful municipal control as between Manchester and the average American city. This is just as important a phase of the ownership question as is the difference in conditions applying to telephone rates in Europe and the United States. No correct parallel can be drawn from mere figures of cost and operation, unless the governing conditions under which these figures are true are also taken into account.

Municipal ownership has been argued against in this country for years, but recently laws were passed in Massachusetts which permitted cities and towns in that State to operate electric lighting plants under certain restrictions. At the present time there are 12 towns and one city in Massachusetts operating electric lighting plants under municipal ownership. A number of other cities and towns are also trying the experiment, the largest of them being the Chicago plant.

It is not easy to secure trustworthy figures of operation of municipal plants in the United States chiefly for the reason that they are usually run in connection with some other city department, making it difficult to separate the proper charges, and because private corporations are subject to various taxes from which municipalities are exempt. Under the present method of municipal government in the United States, the creation of any new city department is at once made an excuse for the employment of politicians and their friends, usually without regard to their special fitness for the places. Such a department then becomes an integer in the general scheme of patronage and soon grows into a wheel or cog of the existing political machine. Naturally, the incumbents of the newly created offices desire to make the best showing possible for their administration; therefore their annual reports of cost and operation will likely be prejudiced in their own favor. Consequently, in the case of municipal ownership of electric lighting plants, we find created an unfair competition which private electric lighting corporations find difficult to meet and still pay dividends which their stockholders formerly received and still have a right to expect.

We take great pleasure in knowing that the ELECTRICAL REVIEW is in such close touch with the electrical field as is shown by the following remarks by a well-known incandescent lamp manufacturer:

Your editorial on "Incandescent Lamps," in the issue of the first inst., indicates that you have an excellent idea of the present situation and we can endorse every word of it, for it exactly accords with our ideas, and we think it is not putting it too strongly to say that it is the best editorial on the subject we have seen. We have faith to believe that the near future will see a more healthy and business-like condition in the incandescent lamp business than at present exists, and certainly we shall do all we possibly can to bring about the desirable and absolutely necessary change.

Another prominent lamp manufacturer, in writing about the situation to one of his salesmen, said:

I think the editorial in the ELECTRICAL REVIEW of May 1 explains my ideas more clearly than I could myself if I had to write them out.

And another lamp manufacturer writes to us as follows:

I congratulate you on your editorial on incandescent lamps contained in your issue of May 1.

Col. Albert A. Pope, of Boston, is indefatigable in his campaign for good roads. He has just issued an interesting letter on the methods used in good road building in Massachusetts. This letter ought to be in the hands of every citizen both for his own perusal and to hand to his neighbor. The importance of good roads to any community cannot be overestimated.

The "Advance Information" department of the ELECTRICAL REVIEW grows more valuable each week. People who read it carefully report to us that it does them lots of good in a business way. Sometimes it is just as important to know what things to keep away from as it is to know what to go after. We try to supply both kinds of news.

We desire to call the attention of the few people who are interested to the fact that the Victor Electrical Company, of Cleveland, Ohio, issues an alleged monthly publication, advertising its own wares, which does not hesitate to steal matter from the legitimate electrical journals—especially the ELECTRICAL REVIEW.

In an electric plant competent firemen are as necessary as good boilers.

Wall Street and the Electrical Stock Market.

Wall street enjoyed one of those old-time bull movements during the week which lifted quotations to a higher plane, broadened the market and created an era of better feeling. London, Paris, Amsterdam and Berlin buying was the backbone of the advance. Those centers have begun to take our securities in earnest. It is estimated that 225,000 shares of stocks were taken on Thursday, Friday and Saturday of this week, and that since the government bond purchase was consummated, some $50,000,000 American railroad bonds have been bought by foreigners. The domestic interests each day of the first four days of the week looked for a reaction, and on this idea sold stocks on realization. Each time London absorbed them without an effort and the advance continued. The heavy foreign purchases naturally created a big supply of commercial bills. This caused sterling exchange to drop 2 cents per pound in a week, rendering gold exports this Spring improbable, and causing the government bond syndicate to return to its members some $12,000,000 in gold, which had been deposited to aid the syndicate in preventing gold exports. The London demand, as well as the better feeling at home, is based upon a gradual revival of business and the improved prospects for a good crop.

The bulk of the speculative interest was centered in railroad shares to the neglect of the industrials. For this reason electrical securities were quiet, although strong. General Electric recorded only a moderate volume of trading within a range of 1 per cent. There were any number of bull points on the stock, but it went up only a large fraction. The debenture bonds hardened, selling at 90½.

Edison Electric Illuminating advanced on moderate transactions from 97½ to 101¼. The bonds from 106⅞ to 107½. American Telegraph & Cable went from 93 to 96.

There was pronounced activity in Western Union. The stock went from 88⅞ to 93⅞ on heavy purchases. During the week there was a rumor that Western Union had secured control of the Metropolitan Telephone Company. The Western Union owns some $1,200,000 stock of the company. It is probable this rumor was put out for stock jobbing purposes.

The annual meeting of the New England Telephone Company was held in New York this week.

The annual report shows gross revenue of $2,172,220, an increase of $129,471, and surplus after charges of $498,462, an increase of $15,794. The mileage is 43,008 and the stations 25,332.

On the Boston Exchange, Bell Telephone hardened from 189 to 193 on Friday. This was reflected in advancing values for other telephone stocks. Erie Telephone advanced 2¼ points to 56¼ and New England Telephone 3½ points to 70. Electric Storage battery was firm at 29½. Metropolitan common was unchanged at 34½ to 35, and the preferred at 52 to 52½.

BAIN.

New York, May 11, 1895.

PERSONAL.

Mr. Frank B. Parsons, of Boston, visited New York last week.

Colonel Babcock, of the Falls Rivet and Machine Company, Cuyahoga Falls, Ohio, was among the visitors to New York last week.

Mr. Ralph L. Shainwald, president of the Standard Paint Company, is confined to his apartments at "The Langham," New York city, by an attack of typhoid fever.

Mr. C. Howard Scrymser has been elected president of the Columbia Telephone Company, of New York city. Gen. E. C. Wallace retains the secretaryship of the company.

President H. L. Storke, of the Empire State Telephone Company, Auburn, and General Manager Hawley, of the Hudson River Telephone Company, Albany, were New York visitors last week.

Mr. John I. Sabin, of San Francisco, and Mr. Angus S. Hibbard, of Chicago, eminent telephone apostles, are at the Waldorf, in New York. They intend to honor Boston with a visit before returning west.

Mr. J. W. Godfrey, sales manager for the India Rubber and Gutta Percha Insulating Company, of New York city, will go to Europe on July 24 to bring home his family who sailed on the "Paris" on May 8.

Mr. E. G. Acheson, the inventor of carborundum, was a welcome visitor to the ELECTRICAL REVIEW office last week. The plant for the manufacture of carborundum at Niagara Falls is ready for operation as soon as current can be obtained.

Hon. Samuel Bryan, president of the Chesapeake & Potomac Telephone Company, Washington, D. C., renewed his youth by a visit to New York last week. Mrs. Bryan accompanied her husband, visiting their two sons who are attending college here.

Mr. J. S. Speer, secretary of the Partridge Carbon Company, Sandusky, Ohio, made a welcome visit to the ELECTRICAL REVIEW office last week. Mr. Speer says that his company is doing a very prosperous business and that he is much pleased with the prospects for better trade.

Mr. W. K. L. Dickson has resigned his position of electrical engineer at Thomas A. Edison's laboratory in West Orange, N. J., in order to go into business for himself in the Portable Electric and Power Company, of which Llewllyn H. Johnson is president, Mr. Dickson, electrical engineer, and H. C. Douglas, secretary. The company's factory will be in Watts Street, New York city.

Mr. R. Leo Van der Naillen, a California by birth, who has held many important positions on the Pacific coast, has been appointed western manager of the Boudreaux Dynamo Brush Company, with headquarters at Chicago. Mr. Van der Naillen is a practical engineer whose abilities will certainly be appreciated by all the western patrons of the Boudreaux Dynamo Brush Company.

Mr. A. M. Young, of Waterbury, Conn., president of the New England Engineering Company, is convalescing from an illness of several weeks. A bruise on Mr. Young's right hand developed into a dangerous growth that required a severe surgical operation at one of the New York hospitals. Mr. Young's numerous friends will be glad to learn that he is now rapidly regaining health at his Summer home on Long Island Sound near Branford, Conn.

Mr. H. S. Kaliske, so well known in electrical circles as manager of the Beacon Vacuum Pump and Electrical Company, of Boston, desires to inform his friends and all others interested, that in pursuance of an order from the City Court of Boston, he has assumed his original family name of Sacks, as has been recently done by other members of his family in New York. As one of his friends put it briefly the other day, "Kaliske has been sacked."

Captain Willard L. Candee, a leading member of the famous Brooklyn Riding and Driving Club, entertained a party of distinguished telephone men in one of his private boxes at the horse show Friday evening last. Among the gentlemen present were Mr. E. J. Hall, Mr. Charles F. Cutler, Mr. H. B. Thayer, Mr. U. Noble Bethell, Mr. Wm. D. Sargent and Mr. Henry S. Snow. The guests were pleasantly entertained at the Montauk Club, and had the additional pleasure of seeing the wife and son of their host win several prizes.

Hon. John R. Murphy, Commissioner of Wires, delivered an interesting lecture on the subject of "Electrical Forces" to the members of St. Augustine Lyceum in South Boston a few nights ago. He touched on the wonderful growth of the electrical industries during the past decade, and the immense amount of work devolving on the Boston Wire Department in the necessary inspections of buildings, poles and wires. An idea of the interior work alone could be gathered from the fact that there were in the city between 60,000 and 70,000 buildings.

Mr. William D. Sargent, the popular telephone official of Brooklyn, carried off first prize with his pretty mare, "Trilby," in a ladies' jumping class at the Brooklyn horse show. Miss Ethel Candee was the graceful equestrienne, winning in a close contest over the bars of five entries. Mr. Sargent, whose friends, at the suggestion of Mr. U. N. Bethell, fraternally address him now as "Little Billee," is an excellent horseman and may often be seen in Prospect Park enjoying a ride on "Trilby," whose dainty feet again have brought renown to the name of Du Maurier's heroine.

New Subway Board for New York City.

It is rumored that Mayor Strong may remove the present members of the Board of Electrical Control, Messrs. Hess, Kearney and Cummings, and replace them with three other men he has already picked out.

Electric Railway Franchises in Brooklyn Declared Void.

Justice Smith, of the Supreme Court, handed down his decision on May 6 in the suit of John Adamson against the Nassau Electric Railroad Company and the Kings County Electric Railway Company, declaring all the franchises granted to these companies by the Brooklyn, N. Y., Board of Aldermen on June 19, 1893, null and void. The decision is a blow to the companies, which are virtually one corporation, under the presidency of Patrick H. Flynn, and which have been engaged ever since they got the franchises in the construction of their various trolley lines. One of these, the line from the foot of Broadway to Canarsie landing, was to have been opened in a few days. So far it is estimated that the Flynn corporation must have spent nearly $1,000,000. Justice Smith's decision, if sustained on appeal, will compel the companies to begin over again their fight for the franchises.

The compensation which the companies were to pay into the city treasury were one per cent of the gross earnings until these should be $20,000 per mile; thereafter two per cent until the gross earnings should be $40,000, and thereafter three per cent. Mr. Flynn will take an appeal from the decision at once to the General Term of the Supreme Court, and thence, if necessary, to the Court of Appeals. The franchises covered nearly 40 miles of track.

Large Electric Fixture Contracts Awarded.

McKenney & Waterbury, 181 Franklin street, and 164 Congress street, Boston, have a high reputation throughout the country and especially in New England as manufacturers of artistic and high-class gas and electric fixtures. That this reputation is deserved is proved by the many large contracts awarded to this firm for their reliable goods. Among the contracts received recently for gas and electric light fixtures by Messrs. McKenney & Waterbury, were the Worthington Building, State street, Hotels Belvoir & Westgate, Commonwealth avenue, Boston; Grand Army Republic Building, North Attleboro, Mass.; Town Hall, Littleton, N. H.; Masonic Building, Augusta, Me.; and the Rhode Island State Armory Building, Pawtucket, R. I.

Professor Weston Wins a Railroad Case.

Prof. Edward Weston, of the Weston Electrical Instrument Company, Newark, N. J., recently sued the Delaware, Lackawanna & Western Railroad because the baggage master at Newark refused to check a leather case of fishing rods as personal baggage. Judge Henry, of Newark, handed down a decision last Saturday awarding six cents damages and assessing costs upon the railroad company.

A sign on a little store in upper Seventh avenue, New York city, reads as follows: "Upholsterer and Electrician." Another one in Augusta, Ga., reads: "Electrician and Undertaker."

TELEPHONE NEWS AND COMMENT.

Considerable reductions in Bell rates have been made at Mankato, Minn.

The new telephone company at New Britain, Conn., is about ready for business.

The Woodbridge Telephone Company will begin very shortly the construction of its lines in Alexandria, Va.

The local Bell company in Cincinnati expect to spend $100,000 this year in extending their conduit system.

Telephone rates in Carrollton, Mo., have been reduced to $2.50 per month for business houses and $1.75 for residences.

It is reported that a number of barbed wire fence telephone lines are being constructed in the vicinity of Webster City, Ia.

The Cumberland Telephone Company has established a rate of $2 per month for residence service on three-party lines at Nashville, Tenn.

The Central New York Telephone and Telegraph Company has accepted the franchise granted by the Utica, N. Y., Common Council for subways.

The New York & Pennsylvania Telephone Company is constructing two new and additional metallic circuit lines between Dunkirk, N. Y., and Erie, Pa.

The Southern Standard Telephone Company, capital $4,000,000, to operate in Tennessee, Kentucky and the Carolinas, has been organized at Memphis.

The Southern New England Telephone Company is improving its new trunk line between New Haven, Conn., and Westerly, R. I. The work is already completed to New London.

The poles have been distributed between Bradford and White River Junction to complete the construction of the New England Telephone and Telegraph Company's trunk line between St. Johnsbury, Vt., and Boston.

Lansing, Mich., business men want a new telephone franchise, but the aldermen want to see some money raised first. They propose to charge $1.50 and $2 a month respectively for residences and business houses. They expect 300 subscribers to start with.

A manhole of the Southern New England Telephone Company, at Hartford, Conn., was blown open by an explosion on May 6, through an accumulation of illuminating gas in the conduits. The same manhole and another were blown open about three weeks previous.

The contract for building the exchange at Oshkosh, Wis., for the Oshkosh Northwestern Telephone Company has been awarded the Northwestern Telephone and Electric Company, of Milwaukee, of which A. B. Ferdinand is the general manager. The work of construction will be commenced immediately.

A noticeable increase in the number of subscribers to local Bell exchanges is recorded in nearly every place where rates have been appreciably reduced. A good instance is afforded in Winsted, Conn., where the Southern New England Telephone Company has secured 35 new subscribers since rates were reduced.

The Interstate Telephone Company has secured a franchise at Scranton, Pa., which requires the completion of the plant in six months, the use of a telephone equal to that now in use and capacity to supply 300 subscribers. A maximum rate of $30 a year is made and a bond of $10,000 required before any work is done.

The New York & New Jersey Telephone Company has met the competition of the Mutual Telephone Company at Rahway, N. J., by reducing the rentals to $30, $40 and $50 a year, instead of $60 and $90, formerly charged. The Mutual company has been organized and has obtained rights of way. The rate this company proposes to charge is $30 a year.

The Harrison International Telephone Company held its annual meeting at Chicago on May 6 and elected the following directors for the ensuing year: Stephen B. Elkins, R. C. Kerens, George R. Peck, William Warner, C. M. Ferree, Dr. E. M. Harrison, H. M. Holden, H. J. Hanford, Patrick Egan, H. S. Smith and J. T. Blake. Messrs. Smith and Blake are new additions to the board.

The poles of the prospective long-distance telephone line extension from Glen Cove to Huntington and Northport, Long Island, have been set by the New York and New Jersey Telephone Company as far as Cold Spring Harbor. The work is progressing rapidly in other directions and the equipment will be first-class in every respect. Exchanges will be established at all places where business will warrant it.

The stockholders of the Metropolitan Telephone and Telegraph Company had their annual meeting on May 17, at 18 Cortlandt street, New York city, and elected the following board of directors for the year: Charles F. Cutler, Joseph P. Davis, Thomas T. Eckert, William H. Forbes, George J. Gould, Edward J. Hall, John E. Hudson, James Merrihew, John Jameson, Charles A. Tinker, John Van Horne, William H. Woolverton and John H. Cahill.

The Home Telephone Company has begun operations in Baltimore, Md., by placing a telephone service between the office of District Attorney William L. Marbury, in the Post Office building, and Mr. Marbury's law offices. The telephones in the two offices of Mr. Marbury are the only ones of the company yet put up in Baltimore. Mr. Marbury is the counsel for the Home company. The new system will be operated by the Drawbaugh patents, and, it is reported, at a great reduction in rates.

The Hudson River Telephone Company, through General Manager Hawley, has purchased from the Western Union Telegraph Company the former Mutual Union line of four wires extending between Poughkeepsie and Hudson. This enterprise on the part of the telephone company means that Governor Morton will have his residence at Ellerslie connected with the Capitol at Albany by the first of June. The toll business of the Hudson River Company is greatly increasing, and this purchase will add materially to the system.

Owing to its excellent management and improvements in the service, the Metropolitan Telephone and Telegraph Company is able to furnish New York city service on metallic circuit lines with long-distance equipment at the following yearly rates: Two-party line, $75; exclusive line, $90 and upward, according to use. Where a second station in the same building with the main station is desired, with a movable desk set for the use of the principal or manager, the rates are $24 and $36 per year. The rates for private lines and interior telephone systems have also been modified and reduced.

A holder of American Bell Telephone stock is reported to have said: "I am very much encouraged over the outlook for the telephone industry. The opposition companies are advertising the telephone as one of the prime necessaries of life and the conduct of business, and it need not be many years before the Bell has a million instruments outstanding. If anybody else finds a more economical method of efficiently performing the telephone service, I think we shall all be willing to sell our real estate, structures, copper wires, conduits, switchboards, etc., at a fair price, or deliver the whole outfit through the medium of Bell Telephone Company shares at a cheaper price than it would pay anybody to attempt a duplication."

At the recent annual meeting of the New England Telephone and Telegraph Company the old directors were re-elected with the exception of Frederick Ayer, who is succeeded by Charles F. Ayer. The stockholders rescinded the act of February 2, 1886, creating preferred stock. In expenses the operating department increased from $283,723 to $313,864, maintenance from $570,868 to $676,219, while rental and royalties decreased from $323,263 to $253,807. Expenditures for new construction were $445,095, against $357,087 the previous year. Of this $216,946 was for underground work. Estimates this year are $400,000 for new construction, $720,000 for maintenance. A sixth issue of $500,000 five per cent 20-year bonds has been authorized by the directors. The underground system now extends through 30 miles of Boston streets. About one-half the company's subscribers are now using metallic circuits.

The Detroit, Mich., council committee on ordinances recently made an attempt to persuade the Harrison Telephone Company to reduce its rate for residence telephones from $36 a year to $25 a year in Detroit. Manager Britt could not see it that way and therefore the committee did not recommend the ordinance. All the other requests made by the committee were accepted. The company agreed to a 30-year corporation clause; it consented to deposit a certified check for $25,000 with the controller as a guarantee that its system of telephones would be in operation within a year; it agreed to pay the city three per cent on its gross receipts, and to pay for all repairs to the street pavement made necessary by the laying of its conduits. Later, Manager Britt appeared before the committee and said the directors of the company had held a meeting and agreed to make a rate of $30 for residences. He didn't believe anything better could be done.

The Missouri and Kansas Telephone Company on May 1 moved the local exchange at Kansas City, Mo., from the quarters in the Wales building, at Sixth and Delaware streets, to the handsome new quarters fitted up for it in the Telephone building at Sixth and Wyandotte streets, one block west. The general offices of the company have been in the latter building for two years past and the work of preparing for the consolidation has required ten months of unceasing work. There have been duplicate connections to all the telephones for the past few weeks, each subscriber being connected with both the new and old switchboards. It required about three seconds to disconnect from the old board and make the connection with the new. Probably not one of the 2,700 subscribers was aware when the change was made. At 4.30 o'clock a force of telephone girls was sent from the old office to the new, and took their places at the new switchboard. At a signal given by General Manager Burt, in the new office, Electrician Barrett, at the old office, pulled a string which removed the lightning arresters on each of the 2,700 connections at the old office. This broke the connection and the calls, which came in uninterrupted, were instantaneously transferred to the new board. The transfer was a complete success and there was not the slightest hitch in the arrangements, which were carried out promptly at the scheduled time.

Novel Applications of Electricity.

A correspondent writes to the London *Electrical Engineer* as follows:

The other day a friend of mine who is a jeweler asked me jokingly whether I could rig up an electric shock-producing device for testing diamonds and the detection of sham or paste diamonds. After thinking the matter over, I presented him, a couple of weeks later, with the following apparatus to his entire satisfaction: To the spindle of a small electric motor is attached a small thin disk made of aluminium and placed in horizontal position. A clamp with a small flat spring, and provided with an adjustable screw, holds fast a ring or any other article with the real or sham "brilliant." The ring, etc., is moistened, and slowly moved by hand towards the disk, driven at high speed by the motor, thus applying, so to speak, a brake to the motion of the disk. The idea is based on the fact that if a sharp piece of aluminium be rubbed on moistened glass, brilliant metallic markings result on the glass diamonds, but not on those which are genuine. If some metallic marks are found on the so-called "diamond," then, of course, it is not a genuine article; otherwise it is a real diamond of the first water.

I am not a philatelist, but by some chance I became a possessor of a few hundreds of good genuine stamps. As I am of original mind, I did not gum them into the usual old-fashioned stamp album, but I rigged up a special apparatus for the purpose: An endless thin leather band is driven by means of an electric motor at a very low speed. The stamps were pasted to the band, and this combination was fixed inside a longitudinal box, ornamented externally with velvet and fancy brass nails and rosettes. At a certain part of the box is fixed a small movable brass tube provided with an objective glass. A small electric incandescent lamp, provided with a silvered reflector, is also fixed inside the box. By pressing on the pear-shaped button every stamp is seen magnified many times its size, is succeeded soon by another stamp, and at the same time more "light is thrown on the subject."

The last novelty is an electric egg-testing device, and consists of a box ornamented by velvet, rosettes, etc., and provided with two holes. In a corner inside the box is fixed a mirror at 45 deg. A small electric lamp is fixed outside the box in such a manner that it throws light on the egg placed in the hole in the top of the box. Through another hole or aperture you can see through reflection on mirror whether the egg is translucent or not. Of course, the idea is based on the well-known fact that if you hold a bad egg opposite strong light of a lamp, etc., you can see black stains or streaks inside it. A good egg is translucent or partly transparent.

English as She Is Spoke.

Some time ago the ELECTRICAL REVIEW gave its readers a short abstract of the English contained in the columns of our linguistic friend and honored contemporary, *Helios*, a paper published in Leipzig in the interest of export trade. As we feel sure the average English-speaking person has but a hazy perception of the infinite and exquisite brilliancy with which a foreigner may handle Anglo-Saxon, and believing that our Liepzig friend should have a little encouragement in his difficult task, we make free to quote a few paragraphs from its April issues:

1. "Czernowitz: La Elektricitats Actien Gessellschaft vorm. Schuckert & Co. at Nurmberg has been charged! with the establishment of electric lightning!! and tramway at Czernowitz. The electric lightning will begin to work on October 20th, 1895, at latest, whereas the electric tramway of 7 km. of length (rather an unusual length for a tramcar) beginning at the railroad station, and having to conquer a great many difficulties of the ground, will commence its service on May 5th, 1896." We extend hearty congratulations to the enterprising firm, and trust that "Jupiter Tonans," mentioned elsewhere, will not fail to be present at the appointed hour.

2. "From the Book Table: Fr. Wilh. Boescheisen, Leutenberg. Price list for resellers! Contents: ringing bells, tableaux (we trust no *tableaux vivants* pressure buttons, the general consulates as well as the ordinary ones of the German Empire in foreign countries, further 4 separate *parts* originally representing the duration of letters, the taxes of parcels, etc. (If we were only sure about the original duration of letters, we could venture to speculate on their future destiny, but ——) A particular advantage of the map consists in its being accompanied *of* the commercial flags of all countries! (It is plain to our Anglo-Saxon mind that a map, accompanied by so many colors, must find itself in excellent society.)

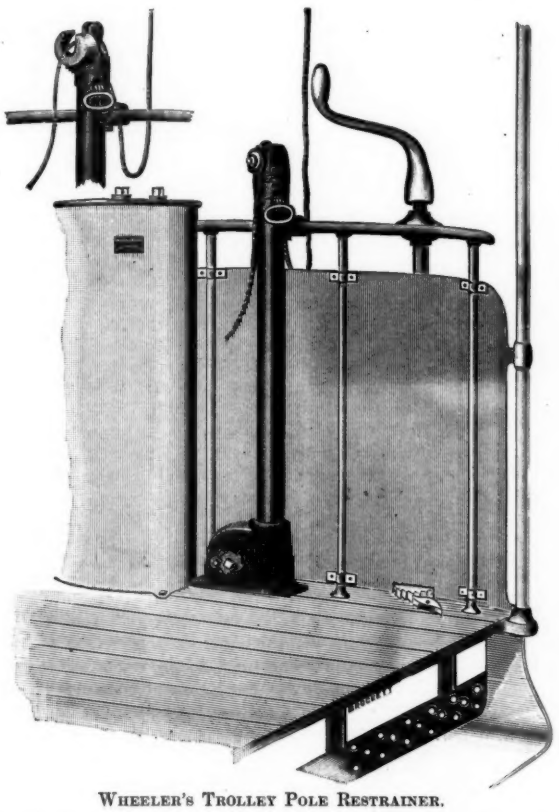
By the by, our foreign news editor would like to know from *Helios* what "applicated electricity" is. He is anxious to learn.

At the annual meeting of the Mexican Telephone Company in New York last week Charles E. Brown, of Boston, was elected a director in place of Robert Bacon, of New York.

The Wheeler Trolley Pole Restrainer.

Frank Wheeler & Son, Meriden, Conn., have recently received a patent on a device illustrated herewith and designed to avoid the bending of trolley poles and breaking of span wires, switches, etc., as a result of the trolley jumping from the wire. The device, it is stated, has proved successful in actual practice.

The apparatus consists of a steel tube having its lower end screwed into an iron box that is firmly fastened to the platform of the car. The top of the tube carries a sleeve, which is clamped to the cross rail of the dashboard. Hinged to the upper part of the sleeve is a cap that can be thrown open or closed up at will. This cap tends to protect the mechanism inside as well as to keep out rain, dust, etc. Sliding up and down in the tube is a plunger containing in its upper portion a movable sheave. The trolley cord passes through the sheave block and the end is brought up over the edge of the recess in the cap and fastened by a peculiar device situated on one side of the sleeve. This device is so constructed as to admit of a fastening being made with great rapidity. This is quicker even than the ordinary method of fastening a trolley cord. The movable sheave controls the action of two hardened steel dogs, which, by virtue of a spring that keeps them thrown out, ordinarily rest on the upper edge of the tube and so keep the plunger at the top of it. By lifting up on the sheave the two dogs are automatically drawn together, leaving the plunger free to slide down in the tube. Running up one side of the tube for its whole length is a slot through which projects a handle fastened to the plunger. By means of this handle the plunger, of course, can be raised or lowered in the tube.



WHEELER'S TROLLEY POLE RESTRAINER.

The iron box at the bottom of the tube contains a drum, to the outside of which is attached a flexible connection with the lower end of the plunger. On the inside of the drum, for the purpose of revolving it, is placed a heavy steel coil spring. The spring can be set at any degree of tension from zero to 60 pounds by means of a nut combined with pawl and ratchet situated on the front side of the iron box.

When the right amount of tension has been given to the spring, the plunger is drawn up by hand to the top of the tube. The trolley cord is then passed through the sheave block and the end fastened with just enough slack left to meet the various heights of the wire from the roadbed. The machine is now ready to act. The instant the trolley jumps from the wire the tension on the trolley pole itself would cause it to fly upward and then draw the dogs together. But the moment they are drawn together they release their hold on the upper edge of the tube, and the spring at the bottom, acting instantly, draws the trolley pole quickly below the wires. Thus the striking against and breaking of the wires or the bending of the pole is avoided. It will be noted that, inasmuch as the cord passes through the sheave block and is fastened at the end, that for every inch the plunger drops the trolley itself will drop twice as much. Consequently, one is enabled with an ordinary tube two and a half feet long to get a working motion on the trolley of five feet. It will readily be seen that a car equipped with a pair of these machines is insured against any of the above-mentioned mishaps, and as the device acts entirely automatically and positively, it must necessarily prove a much more perfect safeguard against such accidents than the most vigilant conductor could ever be.

Tommy Brown.

[*From the Inter-State Quarterly.*]

"I'm just discouraged," said Mr. Brown
To his wife one day as he came from town;
"'Tain't no use sendin' our Tom to school,
He'll never be nothin' but jest a fool.
He studies like blazes, the teacher said,
But he can't get nothin' through his head;
The 'xamination he'll never pass—
He's the dullest boy in the hull blamed class."

"Tom may be dull," said Mrs. Brown,
"But he's jest the steadiest boy in town.
'Tain't always the brightest that win the day,
But the ones that jest keep peggin' away.
His skull may be a little thick,
But he can't be beat on 'rithmetic
And any time he would leave his meals
To work at pulleys and pinions and wheels.
He's built an engine that runs by steam
And a saw-mill down by the medder stream.
I know he's slow, but he ain't no fool,
And I tell ye Tommy is going to school."

So Mrs. Brown she had her say,
And, womanlike, she carried the day.
Tom stuck to his books with dogged vim,
And mastered each with a purpose grim;
Thundered through rhetoric dry and stale,
In Greek and Latin grew thin and pale:
With progress slow, but sure as fate,
At last poor Tom was a graduate.

Then down beside the meadow stream
For days and days he would sit and dream,
And the house was filled with models and plans
Of engines and motors and derricks and rams;
And his father gravely shook his head
And to his mother sadly said
"What good did it do ye to send him to school?
I told ye Tom was a tarnal fool!"

One day the papers were made to ring
With a great invention, a wonderful thing;
They called the inventor a man of renown,
And said that his name was Thomas Brown.

"I allers told ye," his father said,
"That Tom was a genius born and bred,
And anybody could plainly see,
With half an eye, he was jest like me."
"And I s'pose," said his mother, in accents cool,
"That's why you called him a tarnal fool!"

UNDERWRITERS' RULES.

READ BEFORE THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS, NEW YORK AND CHICAGO, APRIL 17, 1895, BY PROF. WILLIAM A. ANTHONY.

ABSTRACT OF DISCUSSION.

Mr. C. O. Mailloux: I am very sorry to call the attention of this body (or at least some of the members of it who may not be familiar with it) to the fact, though many of you are familiar with it, that in the matter of insurance rules the electrical fraternity has been handled with a spirit of inconsistency and partiality and with a want of that broad, liberal treatment that characterizes other lines of fire inspection. This case, of the Attix wire, is perhaps as good an instance as any and it ought to be one sufficient in importance to call the attention of electrical engineers to the necessity of our acting, either singly or jointly, in such a manner and with sufficient emphasis, as to let our voice be heard and prevent the continuance of such inconsistencies.

As the paper very clearly puts it, it strikes one as almost absurd to characterize or define as a tube a piece of wire which has a solid wrapping of some material, supposedly fire-proof, applied to it. It is no more a tube than would be any other wire on which might be put a covering braid or some other material than the insulation. I do not see why a simple braid or a simple tape really is not as much a tube; yet we have found ourselves tied hand and foot in many cases by such rulings as that, on the part of insurance inspection authorities. I might mention a dozen cases in my own practice which are equally incongruous, equally absurd, and which have caused needless delay, needless expense, trouble and annoyance. I think it is time that the Institute as a body should protest against a continuance of such rules and such measures on the part of insurance companies. I may state with pleasure that I have heard several representatives of distinguished and prominent insurance companies express themselves in no uncertain terms in regard to the manner in which this work has been done by those who were supposed to represent them and do their best for their business. I have stated to some of them that it has an evil influence on their business. I know of cases where the insured has preferred to do his own insuring rather than submit to the arbitrary dictation of the insurance inspectors. Some of the insurance companies themselves have expressed their dissatisfaction; and they feel, in some quarters, at least, that there ought to be a change in policy; that insurance rules ought to be compatible with and favorable to progress in electrical installations, and ought to be means of progress rather than obstructing it.

Mr. William J. Hammer: I am heartily in sympathy with the gentleman who presented this paper and the gentleman who has just spoken. I think severe criticism can be made justly upon the underwriters for allowing their inspectors or their experts to bring out rules of this character and pass them and foist them upon electrical engineers and the public at large. I think many of these things have not been treated in as conservative a manner as they might have been. Last year a very earnest effort was made to secure the co-operation of all the electrical interests, including the insurance inspectors, etc., with a view to having one single set of rules go out, having them more rigidly enforced, and having them kept up to date — those efforts, although very earnest, were not brought to a conclusion. Since that time the committee has continued its efforts, and before very long the committee of the National Electric Light Association, who are recognized as the ones who have brought this subject to the front for years past, will extend a formal invitation to the representatives of the telephone interests, the street railway interests, the Fire Chiefs' Association, the American Institute of Electrical Engineers and perhaps some other association or two which will be interested in seeing that proper rules, which are conservative in their character and which do not benefit any particular class of manufacturers or any particular industries to the exclusion of others, are adopted; and it is hoped that before this year is out some uniform action will be taken by these organizations which will look to just the step that Professor Anthony and others have recommended and which is certainly highly advisable.

Mr. H. Ward Leonard: This subject is one that has interested me for a good many years, and I am familiar with the difficulties that have always been met with by contractors in dealing with the rules set forth by the underwriters and the requirements that they lay down. Having installed a good many hundred thousand lamps on different styles of wiring in the past 10 or 12 years, I feel that the use of anything such as has been described in this paper as the Attix "tube and wire" is certainly a distinct reversion to the condition that applied to electric light wiring in about 1885 or 1886. I personally installed work at that time which was done with practically identical materials, and which I think were as good as the Attix tube and wire can be to-day, and it seems to me that the conduit is an essential condition for thoroughly first-class work to-day, and that a conduit, to be of any service whatever, must be a permanent, reliable, strong hole, which will be always there, enabling you to pull the wire out and in, in case of any failure of the wire. I personally am very strongly a believer, and always have been, at least for a great many years, in placing the opposite poles of a circuit, whether it be a two-wire circuit or a three-wire circuit, all inside of a single iron pipe, and I have put in some thousands of lamps in this city in which both poles of the circuit are inside the single, plain iron pipe, with quite satisfactory results; and I wish to call attention to a point which may not have impressed itself on all the members, and that is that in case you do have both poles of the circuit inside of the iron pipe and the system of iron pipe be grounded, it is almost inconceivable that any condition of leakage or trouble in the electric circuit should occasion a fire. In other words, it is my belief that the rules of the underwriters, which they have so strenuously urged for the last few years, that when conduits are used that only one wire be placed in each conduit, is merely aggravating the possibilities of fires which could be eliminated by using first-class insulated wires inside of a single metallic conduit.

Mr. Franklin S. Holmes: I am in hearty sympathy with the paper, and am also disposed to criticise the position occupied by the Board of Fire Underwriters. Any continuous duct into which wires are, or may be, drawn after a building is completed, whether it be paper tube, brass covered conduit, canvas jacket, or iron conduit, are each and all better than plain wire protected however thickly by a pervious insulation. The insulation of the Attix wire is pervious, and in no sense can such protection be considered as the equivalent of a duct, however fragile or strong. I repeat, I think the Board of Fire Underwriters has limited duty to perform and should confine its action to impartial rules in matters involving fire risk only. It should leave devices and methods which pertain to excellence of construction to others whose business it is.

Mr. W. J. Jenks: I feel a great deal of interest in this paper which Professor Anthony has read, not alone because I am thoroughly in sympathy with the views which he expresses, but also because I think the discussion of the general subject of the relations between the electrical engineering profession and the fire insurance underwriters may, if now taken up by the Institute, become very profitable. I have had some little experience in representing the incandescent electric lighting industry in discussions with the insurance people during the past 12 years.

I believe it will be found that looking the country over, the insurance people are disposed to maintain a feeling of hearty accord with all electrical engineers who are worthy of the name, and in addition to this, to boil down their rules so that they will come to be short schedules of methods which are dangerous and therefore are prohibited, rather than manuals of instruction for the guidance of constructors who know a great deal more about the business than the underwriters ever expect to learn. I remember that as early as 1877 Mr. Barton, to whom I have just referred, who was at that time more intelligently informed in these matters than almost any other active insurance man in the country, by reason of his close contact with electrical central station men, said in an official report:

"Were we again to begin at the beginning, with our present knowledge, we think we should be inclined, in justice to all concerned, to issue rules setting forth those practices that we would *not* permit, rather than stating in such complete detail what should be done."

My own feeling has been for several years that the underwriters would ultimately come to the point of issuing a list of commandments as to what the electrical constructors should avoid, leaving us to elaborate a set of rules such as have been spoken of to-night, to teach young engineers in detail what they should do in order to secure the best practical results, and I think that list of commandments should begin, as do the most of those delivered to Moses in the olden times—"Thou shalt not."

Mr. Mailloux: The iron conduit tube was adopted by the New England Insurance Exchange in June last. I had occasion to communicate with them with reference to a large installation at Newport which was in their district. I had found that their rules would not allow me to use an iron conduit, although there were certain electrical and other objections to any other forms of conduit which might be allowed under the rules. I stated the case, urging the electrical objections and the mechanical ones as well, and received a reply the next day stating that the objections were well taken, that they had been submitted shortly before by others, and that it had been decided to allow the iron conduit tube to be used with twin conductors for such cases. Some four or five months afterwards, I had occasion, in connection with several installations contemplated in New York city, to go over the same matter. A question came up almost similarly. I went in person to consult with the officials of the inspection department in New York and was informed by them that they had as yet taken no action in regard to the iron conduit tube, expressing at the same time grave doubts as to the propriety of their taking any action whatever. It seemed to them to be something that was of very doubtful, if any, utility, if not absolutely bad. However, in the same breath almost, I learned that the Attix tube, so called, was then allowed. This was several months before any official promulgation of this "Attix" rule was made, as this conference took place some time in October or November. You can scarcely imagine the feeling with which I heard this announcement. I scarcely could believe that we were in a metropolis and in a progressive age when I heard that we were going to be relegated by official direction back to methods which I, for one, should not sanction. I will state that, as a member of the examining board of this Institute, I would not want to acknowledge or accept as a member a man who was capable of admitting Attix wire as the rule prescribes. I would consider that he was doing something derogatory to the profession.

Mr. James I. Ayer: It is very gratifying to me, having worked with the Electric Light Association in relation to these rules for some years, to see the interest taken by the Institute in this matter. A case came up only a few months ago where a very large installation was being made. The specifications were made partly by the manufacturing company and by the architect who had a little assistance in getting them out. But after the contract was awarded, while there were unusual electrical problems involved in the construction work, the parties paying for the installation declined the services of an engineer because they thought they did not need one. They had a competent contractor and realized that it was all right. Later on, when the installation was about to be completed, some comments were made by engineers who observed the work and said it was bad and all that. The question was raised in the board of directors—it was a very large corporation—as to whether it was all right or not. Some thought it was; they advocated the acceptance of the contract as tendered by the contractor, but the point was raised that there was a lack of thorough workmanship. Immediately, the contractor brought in the argument that the insurance certificate that he possessed was an evidence of what they had got; that they had everything that they could demand or desire under the contract. The work was accepted. A month later they paid a considerable fee to an engineer to tell them what the matter was—why they could not successfully operate the plant. It took about $20,000 to correct the evil, and they paid an engineer to tell them how little value an insurance inspector's certificate is. We all know that this question of insurance rules was regarded by many as something beneath the dignity of the Institute. It has been so expressed; it has been so treated. But I think that as the thing has taken shape, it is clear to all the members that it is essential that this Institute take some definite action. (Applause.)

Mr. C. J. H. Woodbury: My former position for a number of years was in technical relation to underwriters of manufacturing property, and I had occasion to have an intimate knowl-

edge of the policy of the insurance companies in regard to electric light and power installation, and as that is now with me something of the past, I can perhaps look at the subject from a disinterested standpoint. There were a great many electric lighting rules, so-called, made by local bodies of underwriters, at times conflicting bodies. In 1893, shortly after the last issuance of the rules of the National Electric Light Association, there was formed in Chicago what was known as the Underwriters' International Electric Association, the name of which has since been modified by the change of international to national. Suffice it to say that they adopted a set of rules which were in most respects along the lines of those of the National Electric Light Association. There were, however, some points of difference and these rules have had several amendments which have been prepared and promulgated from time to time. Two months ago I had occasion to make definite inquiries throughout this country in regard to these electric lighting rules. I found that whereas the rules of the Underwriters' National Electric Association are at the present time very generally adopted, yet there is a great difference in their promulgation and enforcement, and that is a difficulty which seemed to be an inevitable one in the early stages of the work, but will grow less and less pronounced as time goes on, because the insurance companies will have a better trained set of men. At the meeting of the National Electric Light Association I had some unofficial assurances which I was able to present to the committee, and they made a report which has been received with a great deal of favor in insurance corporations. At the present time the affairs of the National Electric Underwriters' Association on the subject of these rules are in exceedingly good and competent hands. The chairman of the electrical committee is a member of this Institute, an electrician of accomplishments and standing, and one who in addition to his technical education has had a very extended practical experience in electric lighting and in telephony and telegraphy. All of these parties perceived the necessity of certain amendments and also the necessity of a unification of the whole set of rules, because this question of the function of these rules is not one which can be sub-divided and separated one part from another by any line of demarcation. It begins with the design and extends to the construction, the installation and the maintenance of all electrical apparatus of whatsoever kind or nature, whether it uses all these quantities of energy which can be converted into heat sufficient to cause a fire, or whether it pertains to the inherently harmless instruments from battery circuits, but which may be and are in certain conditions a possible source of danger by reason of their exposure to the heavier currents used in lighting and in power. These questions are fully recognized and can be treated in only one way, and that is by a conference representing all of the various tributary interests. I am sure that the underwriters are alive to it and that they aim towards that end, because I judge from their representations to me to the extent to which I represent one of these interests of electricity in this matter. I am looking forward to a conference which will occur in the immediate future, representing, I do not care under what head, all of these various electrical interests and which will result in the unification of the electric lighting rules, and it is through that means, and through that means alone, that such a result can be obtained. It should be conceded that it will take time for the training and development and selection of persons competent to enforce these rules adequately and justly. (Applause.)

The Chairman: The importance of this subject seems to demand that it be referred to a committee. We have a letter here received from one of our members who is ill. The secretary will please read it.

The Secretary: This letter is from Mr. Fremont Wilson, a gentleman who I think has been referred to this evening. I will read an extract referring to the subject:

"If Professor Anthony's paper is discussed, I hope it will be deemed of enough importance to have a committee of five appointed and a resolution passed, and a letter sent to the New York Board of Fire Underwriters, requesting the privilege of the audience of our committee to appear before the New York board in relation to the non-observance of standard rules, etc., and to prove to the representatives of the New York board the injury they are doing to the electric light and power interests throughout the country, by the peculiar methods that have been in vogue for the last two or three years."

The Chairman: What action will the Institute take upon this letter of Mr. Wilson?

Mr. Holmes: If this committee, which it is recommended be appointed, is to simply consider what is advisable and appear before the Board of Fire Underwriters, I am in favor of its appointment. But I am not altogether clear, as the resolution is phrased, that the committee will not be formed with instructions. I am in favor of such a committee.

The Chairman: It is proposed to refer the whole subject to this committee for action and report to the Institute.

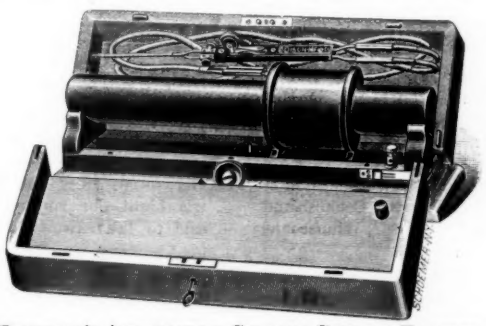
Mr. Hammer: I would like to suggest as it has been stated here tonight, that the matter is already in the hands of the National Electric Light Association and that their committee will extend an invitation to the Institute of Electrical Engineers, as well as representatives of the other interests, and that the matter will then be taken up, not dealing with specific cases but with the whole thing in a broad gauge way. While we may move a little bit more slowly in that way, I think perhaps by joint action going about it thoroughly, we will accomplish more than by having the Institute refer the matter to a committee in the way proposed.

Mr. Mailloux: I agree with Mr. Hammer that the matter ought to receive more deliberation before we act. At the same time, I feel that there ought to be a committee representing the American Institute of Electrical Engineers on the subject. I also feel that further discussion ought to be had on the subject; I think that there are others, who would be present at another meeting, perhaps, who would be able to contribute to the discussion. This subject is too important and it is of too much interest not only for the welfare of the Society but for the individual welfare of its members, to be passed over lightly. So far as the appointment of a committee is concerned I would be willing to leave that to the council. I think the council is competent to appoint such a committee and to give it proper constitution, but I think the whole matter might be well laid over to the next meeting. I would make a motion to that effect. (Seconded.)

The Chairman: If it be your minds that this discussion and the appointment of the committee be laid over till the next meeting of the Institute, please manifest it by saying aye—contrary no. The motion was carried.

The Kennelly Alternating Current Cautery Transformer.

The object of this small instrument, which is made by the Edison Manufacturing Company, 110 East Twenty-third street, New York, is to enable physicians to use the 52-volt and 104-volt alternating current for electro-cautery and diagnostic lamp purposes. The primary circuit is composed of a number of turns of fine insulated copper wire wound round a core of annealed iron wires, the whole being enclosed in a thin cylindrical shell of hard rubber, which is supported by a hard rubber standard at each end. The secondary coil, composed of a few turns of thick wire, is wound on a hollow hard rubber spool, moved by a rack and pinion motion and sliding over the primary coil. The terminals of the secondary coil are brought out to two pin attachments mounted on one head of the coil, and the cautery cords are connected thereto by split socket connections. On moving the secondary coil to the right, the current is increased and vice versa. The apparatus is mounted in a highly polished mahogany box which opens down the middle, as shown in the illustration herewith, and is fitted with a switch at the side, which automatically cuts off the current when the lid is closed. It is provided with an attachment plug, and 10 feet of flexible cord for connecting the instrument to the mains.



KENNELLY'S ALTERNATING CURRENT CAUTERY TRANSFORMER.

The Harrison Telephone Company, of Toledo.

Under a deal that has been on for a couple of months, and which was consummated on May 3, the Harrison Telephone Company, of Toledo, Ohio, goes into the hands of a syndicate, of which Senator Calvin S. Brice is the principal capitalist. This syndicate recently secured a majority of the capital stock of $250,000, and at the annual meeting of stockholders, Col. H. S. Bunker, Edwin C. Shaw, H. T. Cook, of Toledo; C. A. Layton, M. D. Shaw, Jacob Hauss, of Wapakoneta; and George W. Hull, of Lima; were elected directors. The directors elected Mr. Cook president, Colonel Bunker secretary, and Mr. Hull treasurer. The company, it is said, will begin business with 650 three-year contracts.

The Standard Electric Company.

The financial editor of the Chicago Sunday *Tribune*, on May 5, stated that the Standard Electric Company, of Chicago, has increased its capital stock from $1,000,000 to $1,500,000 in order to provide increased facilities that will enable it to promptly and properly care for recent orders, and be the better prepared to handle future business. It also took the important step of electing to the presidency Mr. A. G. Spalding, the well-known lover of field sports and the head of the firm of A. G. Spalding & Brothers, dealers in athletic goods. Mr. Spalding has purchased a large block of stock and will take hold with his accustomed enterprise, relieving Mr. S. P. Parmly, who will remain in the directory, but concluded to resign from the presidency, owing to the health of members of his family necessitating prolonged absence on his part. Mr. E. E. Crepin will continue to be treasurer and Mr. D. P. Perry the general manager. The remaining members of the directory are Mr. Gilbert B. Shaw, president of the American Trust and Savings Bank, of Chicago, Mr. J. P. Whitney, a capitalist of Philadelphia, and Mr. G. A. Rollins, a capitalist of Boston. In this connection it will be recalled that to the Standard Electric Company belongs the credit of having defeated the plans to compel the World's Columbian Exposition to pay a price for the electric lighting that would have been practically prohibitive, and it established the rate that enabled the Exposition officials to secure the 4,000 arc lamps for nearly one half the sum originally called for. Moreover, the service plant that the Standard company installed in Machinery Hall not only supplied 25,500,000 arc lamp hours, or nearly 20 per cent more than any other arc plant at the Exposition, but accomplished all this without the loss of an armature or even an armature coil.

As the company has under consideration the leasing of one of the largest factories in the West, manufacturers of machinery tools will be interested in this note.

Seely's Electrical Casino.

Mr. John A. Seely's electrical casino at Brighton Beach, Coney Island, will be opened to the public this week. It includes a large electrical scenic theater with a stage opening 20 by 30 feet. The effects are much more elaborate than those in the scenic theater at the World's Fair. Performances will be given frequently. The casino is easy of access and is conveniently reached by several lines of steam and electric railways. After the season at Coney Island the scenic theater will probably be removed to the Cotton States and International Exposition at Atlanta, Ga.

The Norristown, Pa., Electric Light Company has received a three years' contract for 79 city arc lights at $100 each per year. Additional lights will be supplied to the city as required, on the same terms.

ADVANCE INFORMATION.

VALUABLE INFORMATION FOR MANUFACTURERS AND DEALERS.

We publish below the earliest information obtainable relating to new electric railways, new electric light companies, new telephone companies and projected electric construction of all kinds. Every reader will find these columns of special interest, and manufacturers and supply houses will receive many valuable suggestions looking to new business by carefully watching this department in the ELECTRICAL REVIEW from week to week.

New Telephone and Telegraph Companies.

ANDERSON, IND.—The American Telephone Construction Company has been granted a franchise to put in and operate an exchange at Brookville. An American exchange has been completed at New Castle.

WINONA, MINN.—The construction of a telephone line from Winona through Fountain City to Waumandee is being advocated.

PARIS, ME.—The New England Telephone Company is putting in a local exchange at Rumford Falls. They will also put in a metallic circuit from that place to Canton.

WEST WINSTED, CONN. — The Southern New England Telephone Company will establish a line between here and Millerton, N. Y.

CONCORD, N. H.—Telephone exchanges are to be established in Peterboro and Milford.

SAVANNAH, MO.—The Savannah Telephone Company has been incorporated with a capital stock of $10,000. Incorporators, B. E. Egan, John Donald, L. N. Hooper, Jr., J. Z. Hughes and J. A. McLean.

ROCHESTER, MINN.—A telephone system will be established here soon.

PATCHOGUE, N. Y.—The Telegraph Company has been granted a franchise to erect poles and wire for their long-distance telephone service to be established.

CHICAGO, ILL. — Messrs. Haddleton and Woodin have been granted franchises for telephone exchanges in Chippewa Falls and Eau Claire.

CARTHAGE, MO.—A new telephone line is to be established here to connect with Webb City and Joplin.

NEWPORT, OHIO.—A telephone exchange is to be established here.

CITY OF MEXICO.—The Standard Telephone Company has organized a company with a capital stock of $2,000,000.

EMPORIA, KAS.—The Emporia Telephone Company has been incorporated by Calvin Hood, L. L. Hallock, S. Strauss, T. H. Dinsmore, David Stone, D. W. Morris and W. R. Irwin. Capital stock, $8,500.

PITTSFIELD, MASS.—A Mutual Telephone Company has been organized here.

TOMAH, WIS.—Efforts are being made to establish a new telephone exchange.

LOUISVILLE, KY.—The American Telephone and Telegraph Company have filed articles of incorporation. Capital, $10,000.

LUBEC, ME.—The Western Union have announced intention to build telegraph line to connect Lubec with the country *via* East Machias.

GARRISON, COLO.—Corporation papers have been filed for the Garrison-Duncan Telephone Company to be operated between this place and Duncan. The incorporators are P. B. Gates, C. R. Foster and Wes. Staley, of this place, and T. H. Miles and L. O. Ray, of Duncan. The capital stock is $5,000.

COVINGTON, KY.—The directors of the Citizens' Telephone Company, which has just acquired rights in this city, are: President, I. R. Megrue, of Cincinnati; vice-president, Alexander Davezac; secretary and treasurer, C. W. Coffin, of Cincinnati; W. Glore, of this city; and W. H. Harton, of Newport.

ENNIS, TEX.—A new telephone exchange has been established here.

OLEAN, N. Y.—A stock company has been formed to build and operate a telephone line between the villages of Silver Creek, Smith Mills, Irving and Forestville.

CHICAGO, ILL.—Unity Telephone Company has been organized. Capital stock, $100,000. Incorporators, W. R. Crumpton, John C. Adams and Thomas V. Strain.

FOND DU LAC, WIS.—Subscriptions are being secured for a new local telephone exchange.

SIOUX CITY, IA.—A new telephone exchange is to be established here.

ALTOONA, PA.—The Phœnix Telephone Company will establish a branch here.

JAMESTOWN, N. Y.—A stock company has been formed to build and operate a telephone line between Silver Creek, Smith Mills, Irving and Forestville.

PHILADELPHIA, PA.—The question of granting a franchise to a local telephone company, represented by John J. Burleigh, is being considered.

MILWAUKEE, WIS.—A telephone line between Poysippi and Omro is being built by Dr. McWayne, of Poysippi, and John Boysen, of Tustin. They are also contemplating the construction of a telephone line between Oshkosh and Tustin via Butte des Morts, Winneconne and Bay Boom.

SALINA, KAS.—Arrangements have been completed and contracts let by the Salina Telephone Company for putting up three telephone lines centering in this city and connecting with neighboring towns. One line will extend southeast and connect Salina with Kipp, Chico and Gypsum City. The second line will extend directly south through Mentor, Assaria and Bridgeport to Lindsborg, and the third will extend west to Bavaria and Brookville. The Lindsborg line will probably be extended to McPherson in the near future. It is the intention of the company to build a line to Topeka and Kansas City within the next year.

FAIRFIELD, ME.—There is talk of building a telephone line to Limestone in the near future.

NASHVILLE, TENN.—The telephone company which is now engaged in erecting a telephone line from Loudon to Cleveland will also erect a line from Loudon to Kingston.

Electric Light and Power.

ONEIDA, N. Y.—There is talk of starting another electric light plant in this village. The chief promoter thus far is Charles E. Remick.

HARRISONVILLE, MO.—An electric light plant has recently been put into operation at this place at a cost of $15,000.

LELAND, ILL.—An electric light plant is to be established here.

LITTLE ROCK, ARK.—The Mammoth Spring Electric Light and Power Company have filed articles of incorporation. Capital stock, $100,000.

KANSAS CITY, MO.—The Western Light and Power Company has filed articles of incorporation. The capital stock is $3,000. The stockholders are C. A. Gray, L. A. Hull, E. F. Littleton and J. W. Hull.

MINNEHAHA, MINN.—The trustees of the Soldiers' Home at this place contemplate building an electric light plant at a cost of $5,000.

HOLLAND, MICH.—The Wolverine Electric Light plant has been purchased by the Board of Public Works.

CONWAY, ARK.—An electric light company is being organized here.

MONTPELIER, VT.—Another electric light plant is to be established here.

MAMMOTH SPRINGS, ARK.—The Mammoth Springs Electric Light and Power Company has been incorporated by H. G. King, W. D. Cook, M. J. King and M. H. Cook to maintain and operate a system of electric lights, generate power by electricity and build telephone lines and maintain same. Capital stock, $100,000.

ALVARADO, TEX.—The Alvarado Water Supply and Light Company has been incorporated by M. Sansom and others. Capital stock, $12,000.

CHATTANOOGA, TENN.—The Mayor may be addressed for information concerning establishment of new electric light plant.

LEWES, DEL.—The Henlopen Electric Light and Railway Company has been organized by Dr. Hiram R. Burton, Harry V. Lyons, John Barnes, Charles C. Stockley, Robert G. Houston, Daniel Burton and John M. Richardson to operate a railway from Lewes to Rehoboth or to any other place in Sussex County. Capital stock, $250,000.

LA GRANGE, TEX.—La Grange Electric Light and Waterworks Company, reported sold to Taylor and Bradshaw.

SAN FRANCISCO, CAL.—Consolidated Electric Light Company reported as having been incorporated.

LEAVENWORTH, KAS.—Merchants' Electric Light Company reported business sold to Leavenworth Light and Heating Company.

KNOXVILLE, TENN.—The East Tennessee Marble Producers' Company is erecting an electric light plant at its mills.

STEPHENVILLE, TEX.—Steps are being taken looking to the establishment of an electric light plant.

CHERAW, S. C.—The Cheraw Knitting Mills is in the market for an electric light plant for 50 and 100 sixteen candle-power lamps.

BARDSTOWN, KY.—Steps are being taken looking to the establishment of a $7,500 electric light plant.

GRAND RAPIDS, MICH.—South Haven will bond itself for a $10,000 electric light plant.

MILWAUKEE, WIS.—A franchise has been granted the Jno. R. Davis Lumber Company for electric lights.

PHILADELPHIA, PA.—The Egg Harbor City Water, Electric Light and Power Company has been organized with these officers: President, Dr. Theodore H. Boysen; secretary, Robert Ohnmeiss; treasurer, Harry May; directors, John Roesch and Christian Atz.

SIOUX FALLS, S. D.—The subject of electric lights and city waterworks is being discussed by Brookings citizens.

SALEM, W. VA.—The business men of this place held a public meeting recently and decided to organize a joint stock company for lighting the town with electricity.

GREENVILLE, MO.—The Greenville Electric Light, Heat and Power Company has been incorporated with a capital stock of $25,000.

MARION, ALA.—An electric light plant will probably be established. The same engine which supplies the waterworks will be used to supply the power for the electric plant.

BELLEFONTAINE, OHIO.—An electric light plant will be established, and C. E. Roberts, engineer, has submitted his estimate of the cost of such a service. It will be about $20,800.

PULASKI, TENN.—The city will issue $25,000 worth of bonds for the erection of an electrical plant.

TAYLOR, TEX.—The Taylor Electric Light Company has been incorporated by Hugh Burns and others. Capital stock, $20,000.

WAYNESBORO, GA.—J. J. Loth and T. H. Antrim are interested in the establishment of an electric light plant and waterworks.

MORRISTOWN, TENN. — The Morristown Electric Light and Power Company's property is to be sold at receiver's sale May 17.

ELDORADO SPRINGS, MO.—W. B. Lewis and others have been granted franchise to erect an electric plant.

DUSHORE, PA.—The electric light question is being agitated here.

NORTHVILLE, N. Y.—An electric light plant is to be established here. Messrs. Eugene and Al. Scribner are the parties interested. They have purchased ground and are pushing the work as fast as possible.

LOCKPORT, N. Y.—Lockport will own its own municipal lighting plant after the present contract with the Lockport Electric Light Company has expired.

WESTMINSTER, MD.—The people of Westminster have voted for arc lights, and the Carroll County Electric Light and Power Company will install a 40-light arc machine. This company would like to hear from persons having arc supplies to sell.

New Electric Railways.

BAY CITY, MICH.—The organization of the Inter-Urban Street Railway Company has been completed. President, Isaac Bearinger; vice-president, John M. Nichol; secretary and treasurer, Frank E. Snow. Messrs. Bearinger, Snow and Nichol will comprise the executive committee.

BRUNSWICK, GA.—J. E. Du Bignon and others have applied for a franchise to build an electric road.

DANVILLE, VA.—The Danville Street Car Company has sold 150 shares of stock and will use the proceeds in extending its lines along Main street to the suburbs. T. B. Fitzgerald and P. R. Jones are interested.

NEWARK, N. J.—The contracts for the erection of the Newark and Passaic trolley line have been awarded, and work will be commenced at once.

FLINT, MICH.—An electric street car line is to be built by Judge John E. Nolan, of Saginaw.

COLUMBUS, OHIO. — The Zanesville & Columbus Electric Railway has been incorporated by W. J. Dunzweiler, Albert Adams, A. W. Evans, L. W. Doane and A. A. Patterson, to build an electric railroad from Columbus to Zanesville. Capital stock, $10,000.

COLUMBUS, OHIO.—The Cleveland, Painesville & Eastern Railroad Company has been incorporated at Cleveland by I. N. Topliff, A. Everett, Charles W. Wasson and others, to build an electric railway through Cuyahoga and Lake counties and running from Cleveland to Painesville. Capital stock, $20,000.

YBOR CITY, FLA.—The Consumers' Electric Light and Street Railway Company are constructing a new street car line.

SPRINGFIELD, OHIO.—Attorney H. L. Canfield, of Xenia, has secured right of way for the electric road from here to Wilmington, by way of Clifton, Cedarville and Jamestown. The water-power at Clifton will be utilized.

DANVILLE, ILL.—W. S. Matthias has obtained privilege to construct and operate for 20 years an electric railroad on the Chicago and Danville highway from Danville north to Iroquois County.

WILMINGTON, DEL.—Work on an electric railway from Wilmington to Brandy-

wine Springs will be commenced in a few weeks. It will cost $150,000.

SYRACUSE, N. Y.—A two-story fireproof barn, costing in the neighborhood of $50,000, is about to be erected by the Syracuse Street Railroad Company.

SYRACUSE, N. Y.—The Cortland & Homer Traction Company presented a petition to the village Board of Trustees for a franchise to extend the electric road from Elm and Railroad streets to the river.

ATLANTA, GA.—Porteous & Wilkins, of New York, have contracted to build an intramural electric line on the exposition grounds.

NASHUA, N. H.—The Derry & Chester electric road. A large amount of stock has been subscribed and it is expected that the road will shortly be built.

DENTON, MD.—The Harrington, Frederica & Denton Electric Railway Company has been incorporated by Robert W. Reynolds, Ezekiel Fleming, H. Harrington, B. L. Lewis and others, to build and operate an electric road extending from Frederica to a point in the State line at or within a mile of Burrsville and passing through the town of Harrington, thence to Denton. Capital stock to be not less than $100,000, nor more than $350,000.

BALTIMORE, MD.—The Gwynn's Falls Railway Company has been incorporated by Joseph B. Seth, Henry Clark and others, to build an electric road in the western suburbs to Powhatan and Wetheredville. Capital stock, $30,000.

CHICAGO, ILL.—The charter of the Metropolitan Electric Street Railway Company has been filed. The corporation was chartered to construct, maintain and operate street railways in Cook, Dupage, Kane, Lake and Will counties. The motive power to be either horses, electricity or cables, at the option of the company. The company is capitalized for $5,000,000. The incorporators are Robert P. Parker, Richard E. Breed and James F. Dagley.

New Manufacturing Companies.

NEW YORK, N. Y.—The International Forging Company, to heat and work metals and to smelt ores and to engage in business in which electricity may be used as an agent, has been incorporated. Capital, $6,000. Directors, James Seager, J. C. Seager, of New York city; Lorenzo Ullo and J. L. Ullo, of Brooklyn.

AUSTIN, TEX.—The Texas Electric Company has been incorporated by C. W. Hobson and others, with a capital stock of $5,000.

NEW YORK, N. Y.—The Chapin-Douglas Electric Company, to sell, purchase and exchange electrical and mechanical apparatus; capital, $10,000. Directors, Charles E. Chapin, of Greenwich, Conn.; John S. Douglas and Frederick F. Douglas, of New York city.

Business Troubles.

ROCHESTER, N. Y.—Justice Davy has appointed Charles A. Roberts receiver for the Brockport Electric Company, whose affairs are to be wound up through voluntary dissolution. The bond was fixed at $10,000. The assets amount to $3,645.43.

MINNEAPOLIS, MINN.—Application has been made for a receiver for the Kankauna Electric Light Company.

WATERTOWN, N. Y.—F. A. Emerich has been appointed receiver of the Oswego Street Railway Company, and his bonds fixed at $10,000.

Increase of Capital.

CHICAGO, ILL. — The Standard Electric Company has increased its capital from $1,000,000 to $1,500,000. A. G. Spaulding, the wealthy sporting goods man, has been elected president of the company.

ELECTRIC LIGHT FLASHES.

Work has been commenced on a new electric light plant at Delta, Colo.

It is about settled that West Hazleton, Pa., will have an electric light plant of her own.

Cascade, Ia., citizens have decided by a vote of 101 to 38 to grant a franchise to an electric light company to install a plant.

There is said to be little prospect of the village of Randolph, Vt., installing a municipal electric lighting plant during the present year.

The electric light company at Gorham, N. H., is making substantial improvements in its water power, including a long wing dam.

The Grafton, Mass., Electric Company has made a five-year contract to supply twenty 20 candle-power incandescent lights to Wilkinsonville for $200 per year.

Both electric lighting companies in Louisville, Ky., advanced prices on May 1, the increase on incandescents being about 40 per cent, and on arcs about five per cent.

The local lighting company at Ridgewood, N. Y., jumped the price of city lights from $50 to $112, but the village fathers wouldn't see the raise and are now depending on the moon for night illumination.

The Fall River, Mass., Electric Lighting Company is replacing its single phase apparatus with two of the General Electric Company's monocyclic generators of 2,500 volts and a capacity of 2,000 lights each.

Geo. M. Esterly has completed the electric light plant at Bathgate and now wants to put one inside the corporation limits at Langdon, and Langdon is just that blooded to say yes.—*Grand Forks, N. D., Plaindealer.*

The Woburn, Mass., Electric Light Company's plant will be sold at auction by the receivers on May 15, and it is said that at least three combinations of individuals, bondholders and others interested will make an effort to secure it.

The two electric light companies and the gas company at Lancaster, Pa., which recently formed a consolidation, will have a competitor in a new company to be known as the Lancaster Municipal Electric Light, Heat and Power Company, which will ask permission of the City Councils to operate on an underground system.

Application is about to be made for charter for a new electric light plant at Everett, Pa. Permission for right-of-way, etc., has been granted by the town to Percy L. Williams, the leading spirit of the enterprise. All contracts are open with the exception of the line work and wiring, which have been given to Williams & Williams, of Middletown, Conn. Water will be the motive power.

The contract for lighting Atlantic City, N. J., by electricity has been awarded to the Atlantic City Gas and Water Company and the Electric Light and Power Company for 35 cents a lamp per night. It was claimed that the Metzger company, which offered to furnish lights for 20 cents a lamp per night, could not have its plant ready for operation by May 30, when the old contracts expire.

The Holland, Mich., Board of Public Works has contracted for the purchase of the Wolverine electric lighting plant, except the boiler and engine, for $6,000, thus ending all legal contention between the city and the company. The plant's capacity is 1,500 sixteen candle-power lights. There are seven miles of main wire, with two miles of heavy feeders. This gives the city entire control of all electric lighting.

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KINDRED INTERESTS

The Eddy Electric Manufacturing Company, of Windsor, Conn., is reported to have increased wages 10 per cent.

The Walker Manufacturing Company, of Cleveland, Ohio, is reported to have given its employés an increase of 10 per cent in wages on May 1.

"Fifty Years: 1844-1894" is the title of a pamphlet giving a history of the well-known Dennison Manufacturing Company, tag-makers to the world.

The Mozier Safety Signal Company, of Cleveland and Galion, Ohio, have issued an illustrated pamphlet describing their three-position semaphore and safety signal for railways.

Otis Brothers & Company, 3[illegible] Park Row, New York, have issued a list of users of their electric pumps which would seem by its length to augur well for the popularity of the Otis apparatus.

The Bickford & Francis Belting Company, of Buffalo, N. Y., manufacture a special dynamo belt which it would interest every electric light and railway man to know about. This company will be glad to enter into correspondence with any one interested in leather belting.

The Metropolitan Electric Company, 186-188 Fifth avenue, Chicago, has secured the exclusive agency for the United States for the Ayer self-locking windlass. This windlass has several important improvements over other makes now on the market, and commends itself on first sight to all practical station men.

The Safety Insulated Wire & Cable Company, of New York city, owing to its increasing business in New England, has opened a branch office at 35 Congress street, Boston, in charge of Mr. Frank B. Parsons. Both Mr. Parsons and the products of the Safety company are very well known, and the new arrangement should result profitably for both parties concerned.

The General Electric Company will still further extend its big plant at Schenectady, N. Y., this Spring by the erection of a building 360x80 feet on what is known as the Schenectady side of the works. The new building will be two stories in height, of brick and iron, and will cost from $160,000 to $180,000. It will be as nearly fireproof as possible and will be used as a machine shop.

The General Incandescent Arc Light Company, for which R. B. Corey, 714 Havemeyer building, New York city, is general sales agent, has issued a handsome new catalogue in which arc lamps of every description for alternating and direct currents are illustrated and described. Any one interested in constant potential arc lamps should secure a copy of this new catalogue.

The Okonite Company report a vastly increased business for the first quarter of 1895 over the same quarter of last year. Their largest orders for their justly popular insulated wire and cables come from telephone and electric light companies, with the demand for trolley feed wires also increasing. The broad-gauged methods of the management of this highly successful company are bringing it the best business returns in the company's history.

The Globe Electric Construction Company, 29 West 26th street, New York city, are general contractors for isolated plants, house wiring, electric railway work, supplies and central stations. The officers of the company are: John J. Clarke, president; P. M. Mowrey, vice-president and general manager; J. G. Phillips, secretary; and H. C. McKenzie, treasurer. Mr. J. M. Ketcham is the general superintendent. The above gentlemen, with the exception of Mr. Clarke, were formerly with the New York Electric Equipment Company, of this city. Several of the old employees of the New York Electric Equipment Company are now with the Globe Electric Construction Company. The offices of the company are centrally located and up to date. The officers are making a vigorous bid for business, and there is no doubt but they will get it. They have facilities for undertaking even the largest contract.

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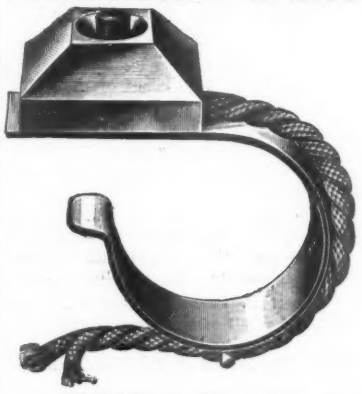
The season at these popular resorts commences June 22.

For full information as to hotel rates, rooms, etc., address George D. DeShields, manager, Deer Park, or Oakland, Garret County, Md.

TABLE PUSH



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